JUN 13 1933
Medical Lib.

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. XXII. OF VOL. I., 1933. LONDON, SATURDAY, JUNE 3, 1933 Pp. 120—Price 1s.
No. 5727. Vol. CCXXIV. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

OXFORD MEDICAL PUBLICATIONS.

SEE PAGE 2.

The June Number of
THE PRACTITIONER
contains a symposium on
DISEASES OF THE HEART.
See announcement on page 3.

¶ *"This book should certainly make and keep for itself a place in urological literature."*—LANCET.

UROLOGY IN WOMEN:
A HANDBOOK OF URINARY DISEASES IN THE FEMALE SEX.
By E. CATHERINE LEWIS, M.S. (Lond.), F.R.C.S. (Eng.), Surgeon to the Royal Free Hospital, Surgeon and Urologist to the South London Hospital for Women.
Size 6¼×8¾. Pp. viii. +73. With 4 Coloured Plates and 23 other Illustrations. Price 6s.; postage 5d.; abroad 9d.
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

FRACTURES.
By MEURICE SINCLAIR, C.M.G., M.B., CH.B. (EDIN.).
With an Introduction by Sir ROBERT JONES, Bt., F.R.C.S.
Pp. 550. 337 X-Ray photographs, photographs and diagrams. 24s. net.
Constable & Co., Ltd., London.

DISEASES OF THE THYROID GLAND
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully Illustrated. £3 3s. net.

"No praise is too high for the author of this great book. It must be considered as the standard work on thyroid disease. Its pages summarise all that is known of this most interesting subject at the present day."—WEST LONDON MEDICAL JOURNAL.
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

BY LIEUT.-COL. ROBERT HENRY ELLIOT,
M.D., B.S. Lond., F.R.C.S. Eng., I.M.S., retd.
A TREATISE ON GLAUCOMA.
2nd Edition. Revised and Enlarged. 30s. net.

TROPICAL OPHTHALMOLOGY.
With 7 Plates and 117 Illustrations. 31s. 6d. net.
Spanish and French Editions, 1922. Full German Abstract.

THE CARE OF EYE CASES: 12s. 6d. net.
MANUAL FOR NURSES, PRACTITIONERS, AND STUDENTS.
Chinese Edition. Oxford University Press.

GLAUCOMA 4s. net.
A HANDBOOK FOR THE GENERAL PRACTITIONER.

THE INDIAN OPERATION OF COUCHING FOR CATARACT.
7s. 6d. net. H. K. Lewis and Co. Ltd.

STERILITY IN WOMEN:
DIAGNOSIS AND TREATMENT.
With 25 Illustrations. Demy 8vo. 9s. net; postage 5d.
By SIDNEY FORSDIKE, M.D., B.S. (Lond.), F.R.C.S., Surgeon to the Hospital for Women, Soho Square, London, &c.
"Shows . . . evidence of rich personal experience."—LANCET.
London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.1.

TEXTBOOK OF GYNÆCOLOGY
FOR THE PRACTITIONER AND STUDENT.
Demy 8vo. Fully Illustrated. 15s. net; postage 6d.
By SIDNEY FORSDIKE, M.D., B.S. (Lond.), F.R.C.S.
"Clearly and concisely written . . . The views expressed are thoroughly conservative and will be generally accepted."—LANCET.
London: Wm. Heinemann (Medical Books) Ltd.

BY W. SAMPSON HANDLEY, M.S. LOND.,
F.R.C.S., Surgeon to the Middlesex Hospital.

CANCER OF THE BREAST AND ITS TREATMENT.
Second Revised Edition. With 82 Illustrations. 30s. net.
(John Murray.)

THE GENESIS OF CANCER: A STUDY OF THE GENETIC RELATIONSHIP OF LYMPH-STASIS AND CANCER.
Just published. 113 Illustrations. 21s. net.
(Kegan Paul, Anglo-French Library.)

ASTHMA AND ITS TREATMENT.
WITH PARTICULAR REFERENCE TO THE FRANCIS METHOD.
By ALEXANDER FRANCIS, M.B., B.Ch. (Cantab.).
Price 7s. 6d. net.
Wm. Heinemann (Medical Books) Ltd.
99, Great Russell-street, London, W.C.1.

OESOPHAGEAL OBSTRUCTION:
ITS PATHOLOGY, DIAGNOSIS AND TREATMENT
(including four chapters on Cancer of the Œsophagus).
By A. LAWRENCE ABEL, M.S. Lond., F.R.C.S. Eng., Assistant Surgeon to the Cancer Hospital, &c.
Pp. 245. 132 Illustrations. 2 Col. Plates. 30s. net.
"Masterful and complete . . . Cannot be too highly praised."
—SURG. GYN. AND OBSTET. JOUR.
Oxford University Press, Amen House, London, E.C.4.

THIRD EDITION. With many Illustrations. 12s. 6d. net.
TREATMENT OF DISEASES OF THE SKIN.
By KNOWSLEY SIBLEY, M.A., M.D., B.Ch. (Camb.).
London: Edward Arnold & Co., 41 and 43, Maddox Street, W.1.

JUST PUBLISHED.
DISEASES OF THE EYE:
PRACTITIONERS' SERIES.
By ANDREW RUGG-GUNN, M.B. (Edin.), F.R.C.S. (Eng.), Surgeon to the Western Ophthalmic Hospital.
F'cap 4to. Illustrated. 12s. 6d. net.
Wm. Heinemann (Medical Books) Ltd.,
99, Great Russell-street, London, W.C.1.

DISEASES OF THE HEART
THEIR DIAGNOSIS, PROGNOSIS, AND TREATMENT BY MODERN METHODS
With chapters on the Ink Polygraph, Clinical Electro-Cardiography, X-Ray Examination, and Anæsthesia in relation to Cardio-Vascular Affections.
By FREDERICK W. PRICE, M.D., F.R.S. (Edin.),
Senior Physician to the National Hospital for Diseases of the Heart; Consulting Physician to the Royal Northern Hospital, London.
Demy 8vo. Pp. 534. With 249 text figures, including 32 sphygmograms, 92 polygraphic tracings, and 87 electro-cardiograms.
NEW SECOND EDITION. 21s. net.

"By great care and by the use of an amazing amount of material, he has accomplished what many readers have been waiting for, giving us a complete account of the diagnosis, prognosis, and treatment of heart diseases by modern methods in association with all the invaluable teaching bequeathed to us by the older masters of clinical observations."—LANCET.

"The most valuable and comprehensive guide to the study of Cardiology with which we are acquainted."—NEW YORK MEDICAL JOURNAL AND RECORD.

"We think that most of our readers engaged in general practice will find this work extremely useful."
—THE JOURNAL OF CLINICAL RESEARCH.

"In our opinion the book is indisputably the most authoritative contribution to Cardiology of our time."—FRANCO-BRITISH MEDICAL REVIEW.

"A book which we believe is destined to remain the standard work on Cardiology for many years to come."—AMERICAN MEDICINE.

"The second edition of this popular work on heart disease bears evidence of thorough revision, while the essentially clinical standpoint of the writer is maintained."—EDIN. MED. JOUR.

"It may be said at once that the book adequately fulfils the purpose it has in view and is a perfectly sound, lucid, and reliable guide."—NEWCASTLE MEDICAL JOURNAL.

"Well written, concise, and complete, containing a wealth of practical information. Obviously based upon the author's own experience and investigative work."—SURGERY, GYNECOLOGY, AND OBSTETRICS (Official Journal of the American College of Surgeons).

"Dr. Price is to be congratulated again on the reappearance in its second edition of his distinguished contribution to the increasingly important subject of Cardiology."—THE CANADIAN JOURNAL OF MEDICINE AND SURGERY.

OXFORD UNIVERSITY PRESS, Amen House, Warwick Square, London, E.C.4.

Have you tried

PHENOLAINE OINTMENT

for PRURITUS

Phenolaine Ointment is strongly antiseptic, and being anæsthetic provides immediate relief.

Clinical samples will be gladly sent on receipt of professional card.

THE PHENOLAINE COMPANY, 43, Brewer Street, Piccadilly, W.1

GERRARD 4741

"The Standard"

A really good strapping suitable for every purpose. Possesses a good grip.

While competitive in price, Zopla is sold on quality alone; this is acknowledged to be good.

Dependable always. Each spool in metal container.

Write for sample and price list.

ZOPLA-BAND (Elastic Plaster Bandage)

for varicose veins, ulcers, sprains, etc.

LESLIES, LTD., High St., Walthamstow, London, E.17

MANUFACTURERS OF PLASTERS SINCE 1823

To Physicians treating

a supply of—

for clinical test sent on request.

ASTHMA

Felsol

'FELSOL' is a colourless crystalline powder of acid reaction, and somewhat bitter but not unpleasant taste. Easily administered by placing on the tongue and swallowing with a little water.

'FELSOL' contains no morphia or other narcotics.

'FELSOL' is equally efficacious in Angina pectoris and Dyspnoea in Phthisis.

Telephone Museum 2855.

BRITISH FELSOL COMPANY LTD., 15, Caroline Street, London, W.C.1.

Telegrams Felsol, Westcent, London.

ADDRESSES AND ORIGINAL ARTICLES

SOME OBSERVATIONS ON PRE-OPERATIVE PROCEDURE*

By E. R. Flint, F.R.C.S. Eng.

SURGEON WITH CHARGE OF OUT-PATIENTS AT THE GENERAL INFIRMARY AT LEEDS

I.—PRINCIPLES

Not so many years ago surgeons had reason to regard it as something of a triumph when their patients survived a major operation; and they felt in no way responsible for complications which were regarded as unavoidable. Since Lister's day things have changed completely, for at the present time a post-operative death is an event which gives rise to an unpleasant feeling that in some way we may have been to blame.

Surgical technique has made amazing progress in recent years, so much so that its perfection is apt to be a danger in that we may be inclined to forget, or to omit to find out beforehand, what each patient can be expected to endure with safety. But is the general standard of technique quite so irreproachable as we like to think it is? Here are some rather disconcerting figures, which I have no doubt could be obtained from any large hospital on analysing the records. In three years at the Leeds General Infirmary there were 50 deaths following operations performed for gastric and duodenal ulcers and malignant disease of the stomach (acute perforations are omitted); in none of these cases was suppuration present at operation, yet in 20 per cent. the predominating post-mortem finding was peritonitis.

Neuhof and Aufses [1] report similarly from three of the representative hospitals of New York: of 246 deaths following operations on the intestinal tract (excluding appendicitis) 45 per cent. were due to suppuration, though all of them were non-infected cases at operation. They report another series of 47 deaths following simple laparotomy for irremovable neoplasms; in 21 per cent. of them death was attributed at autopsy to suppuration. This does not look like blameless technique. It is hardly fair to regard operations which involve opening the intestinal tract as clean; a certain amount of soiling is inevitable and, in the case of the colon particularly, may be a very serious matter. No doubt this accounts for much of the suppuration which occurred in their first series. But another explanation is necessary for the laparotomy cases; it is not at all likely that careless technique could be held responsible for all these. The explanation is probably to be found in the poor resistance that ill-nourished tissues put up against even minimal infection, whether autogenous or introduced from outside, and, of course, during simple laparotomy handling of the parts still further devitalises them for the time being.

Poor Resistance

What do we mean by poor resistance? Some people succumb to acute infective diseases at a time when they are apparently in the best of health; this, I suppose, is a matter very largely of immunity, antigens, and so on; but in the poorly nourished patients whom we try to rehabilitate for surgical procedures it seems to me to be something quite different. The trouble arises, I think, from interference with tissue respiration and intracellular life by defective circulation; the tissues are in fact anoxæmic, the extent to which this progresses depending on the degree of circulatory failure, the vulnerability of the tissues to insults of all kinds increasing as their demise approaches.

In the ordinary good risk class of patient, who is going to have appendicectomy or gastro-enterostomy, pre-operative considerations of this magnitude do not arise, and I do not propose saying anything about the preparation of such patients beyond this: the main post-operative troubles they are likely to experience are lung complications and flatulence. About the former I shall have something to say later; the best way to prevent the latter is to avoid undue starvation and purgation before operation, to handle intestine, especially small intestine, as little as need be at operation, and to give morphia after. Morphia is said to paralyse intestinal muscle; that is not my experience. The relief to the pain of flatulence by gr. $\frac{1}{4}$ of morphia is almost instantaneous, and abdominal distension does not supervene. It is, I believe, quite useless worrying these people with enemata soon after operation; the gradients of intestinal activity described by Alvarez have for the time being become disorganised, and rest is the surest way to recovery.

Now let us return to the patients who have become so gravely affected by their disease that operation is going to be a very serious matter unless their condition can be improved. At this stage it is often enough not so much the original lesion which requires immediate attention as the condition which it has at length brought about. Biochemical, metabolic, and hæmic changes of serious import have arisen; fatigue, under-nourishment from a disturbed digestion, and chronic anæmia have induced a vicious circle of starvation and dehydration and weakened the cardiac and other muscular tissue. All these evil events will be greatly accentuated by anæsthesia and the impending operation with its accompanying trauma, blood, and other fluid loss. It is imperative, therefore, to see to these things in the first place.

The threat to which these patients are exposed is circulatory failure; this is followed by varying degrees of acid-base imbalance. Circulatory failure to the extent of producing primary shock is not commonly seen after operations nowadays; there is in this condition rapid failure due to loss of blood externally or internally into some cavity or into the capillary bed. But secondary shock is, I believe, one of the principal causes of death and post-operative morbidity. This type of circulatory failure with its accompanying tendency to acid-base imbalance is preceded by dehydration, anæmia, toxæmia, and gross defect in one or other of the vital organs, especially the kidneys.

DEHYDRATION

In health the body holds a fairly constant amount of water, any excess being excreted. The balance is automatically regulated by the sensations of hunger and thirst. The normal intake is about 3 litres per day—2 litres as drink, $\frac{1}{2}$ litre in the food, and the rest as water of oxidation. The corresponding output is almost entirely accounted for by the urine and insensible loss from the lungs and skin—sometimes the water of the urine and sometimes the insensible loss may reach the higher figure, depending very largely on the rate of metabolism and the temperature

* Hunterian lecture delivered before the Royal College of Surgeons of England on Feb. 24th, 1933. Part II. will appear next week.

of the environment; but in any case insensible loss is sufficiently large to be a factor requiring consideration in determining water balance.

In conditions of disease, intake may be limited because the patient cannot or is not allowed to take enough. The kidneys put out a highly concentrated urine in an attempt to conserve water, with the result that nitrogenous and other waste materials are retained and acid-base balance is imperilled. Insensible loss continues and may be increased by fever. On the other hand, output may be excessive on account of vomiting or diarrhœa. It has been estimated that in the various juices poured into the upper intestinal tract there is a daily output of from 7 to 10 litres, most of which is normally reabsorbed—that is, three times the average quantity of water taken by mouth, about as many times the quantity of urine excreted and considerably more than the total volume of blood in the body. In patients with persistent vomiting or diarrhœa, therefore, the water lost to the body is enormously increased by depletion of this internal circulation together with a great wastage of chlorides in the former case and alkalis in the latter.

The loss of water from any of these causes brings about a greater or lesser degree of dehydration. Continuing dehydration produces concentration of the blood, increased viscosity with capillary stasis, and anoxæmia; blood pressure eventually begins to fall, acid products, lactic acid, and others tend to accumulate and be retained in the system; acid-base imbalance reacts on the circulation and tissue respiration, and so the ill-effects continue unless the circle be broken.

These matters must be rectified before operation. It must be borne in mind that operation and its attendant circumstances will inevitably cause some further dehydration. A calculation of the loss of water during operation and the four hours immediately succeeding has been made by Coller and Maddock.[2] Taking gastro-enterostomy as an operation of average severity, they reckon the fluid loss at about a litre; 872 g. represents insensible loss and visible sweating; 111 g. is the amount of fluid lost as blood. This is perhaps more than some of us would care to admit; yet I am sure if all the blood, including that mopped away on swabs, were taken into account (as it was in this estimation) the amount would, on the average, exceed our expectations. The insensible loss may be much increased by a high temperature of the environment, by heavy clothing, struggling under anæsthesia, and by the anæsthetic itself. The urinary output during this period was less than 10 per cent. of the total loss. Moreover, this calculation did not take into account loss from drainage-tubes. Fluid lost from these may be very great, especially after enterostomy and common duct operations; the daily output from the latter will be in the neighbourhood of 1½ to 2 litres.

There is a threat, therefore, of dehydration, with all its ill-effects, after any operation; not a serious one, of course, in the ordinary way, but in a patient already to some extent suffering from water loss it is impossible to exaggerate its seriousness. I think a very practical point to keep in mind is the large insensible loss. We are rather apt to judge the loss of fluid from the amount of hæmorrhage, vomiting, &c., and to forget the other routes.

The key to understanding the far-reaching effects of dehydration is supplied by cases of acute high intestinal obstruction, in which deaths were at one time thought to be due to toxæmia, but we now know are explainable on purely physico-chemical grounds. The loss of water and salts drains the blood, which becomes too concentrated to maintain peripheral circulation, and kidney function is depressed almost to the point of ceasing altogether.

ANÆMIA

As in dehydration, so in anæmia, the devitalising effect is largely due to anoxæmia and low blood pressure. In acute hæmorrhage, whether externally or internally, there is sudden and maybe severe loss of oxygen carriers, as well as a diminution in circulating fluid. In chronic illness, resulting from a combination of long-continued inanition, pain, loss of sleep, and so on, anæmia is frequently found along with dehydration without any obvious hæmorrhage; but even when the blood volume is replenished by water-intake the shortage of red cells remains as a serious handicap to tissue respiration. It is estimated that 12 per cent. of the carbon dioxide formed by the metabolism of the body is carried in simple solution in the plasma, 25·3 per cent. by the plasma buffer substances, and 53·5 per cent. by the hæmoglobin of the red cells. Anæmia, therefore, not only deprives the tissues of a varying proportion of efficient oxygen importers, but also of a like number of carbonic acid exporters.

TOXÆMIA

Toxins (which from the surgical point of view are usually of bacterial origin) directly poison tissue cells acutely or chronically, causing cloudy swelling and later actual necrosis and fatty degeneration and depressed functions generally; alterations in the vascular endothelium occur, so that even the colloidal elements of the blood tend to leave the circulation; the blood-forming structures function poorly, and there may be hæmolysis. The effect is to produce anæmia, dehydration, and all the evil consequences already mentioned. There is, in addition, disturbance of the heat-regulating mechanism, resulting in increased protein destruction, and so more waste products to be eliminated by the handicapped kidneys. Toxæmia is of especial interest in surgery, because both before and after operation it is a common cause of circulatory and metabolic changes.

THE KIDNEYS

These play a very prominent part in surgical results, and it is very essential that their functional capacity should be known. A concentrated and somewhat scanty urine may be merely an indication of dehydration, and so may a high blood-urea; when protein is being consumed abnormally owing to shortage of carbohydrates, urea formation is increased. Urea in itself is harmless; it is a highly soluble waste product, distributed throughout the body. Its accumulation is evidence that it is not being efficiently secreted by the kidneys, and any ill-effects which accompany this banking-up are probably due to something other than the urea of which the kidneys fail to dispose. A high blood-urea, therefore, is not necessarily more than an indication to postpone operation until renal efficiency has been improved by giving abundance of water, and perhaps sugar. Jaundiced patients seem particularly apt to develop urea retention from effects produced on the kidneys by some toxic matter in the blood; this, too, can be put right by water if it is not allowed to go on too long. When water and sugar used in the preparation of patients for operation fail to cause diuresis and to reduce the blood-urea to a reasonable level and quickly, the threat of so-called uræmia in the event of an operation is a very real one.

ANÆSTHESIA

The last of the factors liable to induce circulatory failure and acid-base upset is anæsthesia. Ether, which is still the anæsthetic most generally used, is a poison to parenchymatous organs. Some experiments made by McNider [3] are instructive in this respect. He showed that prolonged (two hours) ether anæsthesia has little or no effect upon the alkali reserve of the blood in young animals, but in old normal animals this is markedly lessened—the urine is reduced in amount and may contain albumin, casts, and, more rarely, diacetic acid. He attributes this to an alteration in the physico-chemical state of the blood, an alteration in acid-base balance of such a degree that one organ at least—the kidney—fails to function in a normal manner. This also suggests that age in itself is an indication for careful pre-operative preparation.

Another effect of ether is to produce hyperglycæmia; in a liver already somewhat depleted of its glycogen this additional attack may be serious. Yet another disturbing element of ether is its solvent action on fats. Bloor [4] has shown that prolonged ether administration causes a definite increase in the fat content of the blood. This fat undergoes rapid metabolism in the presence of sugar, but deficiency in this substance results in more or less acidosis.

I have gone into these matters in some detail because I am convinced that the safety of our patients lies more with improvements in pre-operative measures framed to overcome or prevent physico-chemical disturbances than in actual operative technique. If we operate without investigating and correcting these factors as far as possible, there is the gravest danger of precipitating a series of phenomena which can be included under the title of secondary shock, phenomena much more easily prevented than cured. Chief among these are low blood pressure, decrease of fluid in circulation, falling off in metabolism, and a drop in body temperature. Acid metabolites are retained, causing relaxation and increased permeability of the capillaries with a further reduction of blood volume. Strong sympathetic impulses are discharged in an attempt to maintain blood pressure, but as these constrict the arterioles they hinder rather than help the blood to pass into the veins and so back to the heart. In fact, as Cannon has said, a series of vicious circles is started.

Acid-base Balance

Besides the strong efforts by the vasomotor mechanisms to keep up blood pressure, all the available resources of the body are put into operation to maintain the blood reaction within viable limits. Acid-base balance is an exceedingly complex subject; it is, however, of great importance to surgeons as well as to physicians; indeed, in some respects it is of more interest to the former than to the latter because imbalance may be precipitated by surgical proceedings with a suddenness unknown to any purely medical therapy. An exhaustive and excellent account is given by Peters and Van Slyke [5]; much of my information is derived from this source.

The methods by which the body maintains its acid-base balance are chiefly: (1) the respiratory mechanism; (2) renal excretion; (3) neutralisation by the buffers of the blood and body fluids; and (4) internal secretions, of which insulin is a prominent example. These and all the other mechanisms, of which there are many, depend ultimately upon an efficient circulation.

Though hydrogen-ion concentration is little altered by the addition of acid there is actually a diminution of alkali reserve, which is measurable by estimating the carbon dioxide-combining power of the plasma; this is more satisfactory for clinical use than attempts to measure the differences in hydrogen-ion concentration, and depends upon the fact that when acid is added to blood it goes into combination as carbonate salts; the more carbonate formed in this manner the less is available for combination with carbonic acid as bicarbonate; consequently the less the combining power, the more severe the acidosis, and vice versa. The normal limits set to this plasma-carbon-dioxide-combining power are 53 to 75 c.cm. of carbon dioxide gas to 100 c.cm. of blood plasma. Beyond these limits an uncompensated position may arise and, if it is not quickly rectified, especially at the acid end, death will ensue.

Acid-base imbalance may arise from a primary increase or decrease in the carbonic acid of the blood. The respiratory centre is very sensitive to increase of carbonic acid, responding at once by increase in depth and later in rapidity of breathing, whereby the carbon dioxide tension is restored; it is an emergency mechanism to guard against sudden overwhelming of the body with acid, and is implemented by the buffers of the blood. The reduction of bicarbonate which is induced by carbonic acid increase is not as a rule so severe as to bring carbon dioxide content to the level of primary alkali deficit. This is because the diseased conditions which ordinarily cause this type of acid-base abnormality are those associated with obstruction to oxygenation of the blood—e.g., pneumonia—where oxygen-want becomes severe enough to kill the patient before carbon dioxide retention develops into a serious factor. The respiratory response allows as much as 80 per cent. of the bicarbonate of the tissue fluids to be used in neutralising the invading acid before the hydrogen-ion concentration of the blood is materially reduced.

Clinically the important acid-base changes are due to primary alkali excess or deficit. Primary alkali excess causes an increase in blood bicarbonate and hydrogen-ion concentration, and ultimately tetany may develop. It may arise from alkali retention or acid loss. In the first case it may be due to intravenous alkali injections, such as may be given in an attempt to counteract pre-existing acidosis, or it may be due to the intensive alkali treatment of gastric and duodenal ulcers. Alkalosis from this cause has been reported by many observers; Venables [6] cites one fatal case. When due to acid loss, it may be brought about by the vomiting of high obstruction such as occurs with pyloric stenosis, or even by prolonged and frequent gastric lavage. The chlorides removed from the blood are replaced by bicarbonate, and a high and sometimes acute alkalosis develops.

PRIMARY ALKALINE DEFICIT

This is the most important clinical variety of acid-base abnormality. It comes about through alkali loss or acid retention; the two conditions may coexist. Acidosis resulting from decrease in bicarbonates may be due to excessive elimination of these by the kidneys or bowels. Since conditions associated with diarrhœa carry off much of the alkali secreted into the upper part of the intestinal tract (which would normally be reabsorbed), depletion of blood alkali may become severe. In certain degenerative kidney conditions chlorides may be retained, as they are also in the depressed kidney function caused by blood concentration. Perhaps the most serious cases, from the surgical point of view,

are those in which alkali deficit is caused by retention of ketone acids derived from fats and due to lack of carbohydrate, or inadequate oxidation owing to insufficient insulin. Carbohydrate is essential for the complete combustion of fats, and if there is a shortage in the diet the organism sacrifices protein, from which sugar can be obtained; there is, therefore, increase of nitrogenous waste products in the blood as well as a displacing of base from combination with carbonic acid, thus producing acidosis. Carbohydrate may be insufficient for three reasons: shortage in exogenous supply; deficient endogenous stores; and impairment or loss of ability to oxidise sugar.

The common causes of ketosis in relation to surgery are starvation, anæsthesia, infection and pyrexia, and diabetes mellitus.

The constant symptoms produced by alkali deficit are hyperpnœa, dehydration, and tachycardia. In the earlier stages hyperpnœa may be overlooked, since it is deep rather than rapid breathing. Later, headache, nausea, vomiting, and dyspnœa begin to appear, and at this time the alkali reserve is seriously encroached upon. The kidneys respond by a greatly accelerated excretion of water, ammonia, and acid; they can only do so if they are functioning well. In associated renal disease the ammonia excretion is much impaired and, as in these circumstances ammonia does not accumulate in the blood, formation of this substance is regarded as one of the functions of the kidneys.

In chronic cases it is unusual to find clinical evidence of frank acid-base imbalance in the pre-operative period, since chronicity allows time for adjustments; but in patients ill-nourished, dehydrated, and worn out by pain we know there has been a heavy call on reserves, and it is our business to see that these are built up again before the extra strain of operation is imposed.

REFERENCES

1. Neuhof, H., and Aufses, A. H.: Ann. Surg., 1930, xci., 321.
2. Coller, F. A. and Maddock, W. G.: Jour. Amer. Med. Assoc., 1932, xcix., 875.
3. McNider, W. de B.: Surg., Gyn., and Obst., 1925, xl., 493.
4. Bloor, W. R.: Physiol. Rev., 1922, ii., 92.
5. Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, vol. i., London, 1931.
6. Venables, J. F.: Guy's Hosp. Reps., 1925, lxxv., 152.

THE PROBLEM OF RELAPSE IN CHRONIC PULMONARY TUBERCULOSIS *

BY R. C. WINGFIELD, M.B. OXF., F.R.C.P. LOND.

MEDICAL SUPERINTENDENT, BROMPTON HOSPITAL SANATORIUM, FRIMLEY

IT will, I think, be generally agreed that by modern methods of treatment we are able to handle the acute and subacute stages of chronic pulmonary tuberculosis with reasonable success. We do this by means of our routine hospital and sanatorium treatment, define it how you like, helped by collapse therapy and other adjuncts to treatment. But we are faced with the fact that an undue proportion of these apparently successfully treated patients relapse, and that the expectation of life of the proportion who do relapse is not long. By relapse I do not mean merely the reappearance of symptoms, but I mean the appearance, and often the sudden appearance, of definite fresh lesions in those parts of the lung where no lesion was demonstrable before. I certainly do not mean the insidious direct spread of lesions already present. That is not relapse, but simply evidence of inefficient treatment. Incidentally, the large proportion of patients who come to us for treatment have passed the so-called early stage of their disease and have been brought to more or less permanent ill-health by a succession of such relapses.

For the sake of argument I should like to take some imaginary figures. Let us say that of 100 cases discharged from institutional treatment, who have responded excellently and are of such a type and with such lesions that they may be expected to do well, 66 do well and 34 do badly. We can say further that of the 66 who do well a certain number are of that type that would do well in any circumstances: let us compute these at 16. We are left then with, of the patients needing treatment, 50 who do well and 34 who do badly. These figures are, of course, purely imaginary, but are a rough illustration of the present state of affairs and serve to point my argument. Since such a batch of patients would have been treated on routine institutional or sanatorium lines, we have a definite proof that this routine treatment, per se, cannot be depended upon to have a definite permanent effect. Therefore there must be some other factor or factors which will determine the permanence of the immediate good result obtained.

It might be suggested that proper "after-care" is this factor. This may be so. But I have seen many good cases well "after-cared" who have relapsed, and relapsed quickly, and many cases ultimately do well who have not received good after-care, so that after-care does not in any way satisfy me as an explanation. And relative to this one must remark that good after-care is not always obtainable for our patients, and if we are to obtain success we must seek for an influence which will override inequalities of after-care efficiency.

It will therefore repay us to study this problem of relapse. The tuberculosis officer can only study it with great difficulty, as he seldom has the chance of really close clinical supervision of his patients. The general practitioner has more chance of closer clinical supervision, though not, I think, close enough, but he lacks facilities and in most cases also the necessary training and experience. Relapse can best be studied under institutional conditions with all the facilities that an institution gives and where patients are kept under observation for some months. In fact, nowhere so well as in a sanatorium.

STUDY OF A PARTICULAR CASE

I have tried to make a special study of these relapses and have been fortunate enough during the last few years to have seen a good many. I am sorry to think how many I may have overlooked. Of these I propose to describe one fairly typical case which will illustrate many of the clinical features that I have learnt to associate with these relapses, and to argue as from that.

A. C., a big strong boy of 20, had a left artificial pneumothorax, induced in the Brompton Hospital, to which he made an excellent response. He was sent to Frimley and went through his sanatorium course without relapse. He was apyrexial, with a normal pulse-rate, had no cough or sputum, and made a good gain of weight. When ready for discharge he stayed on, doing heavy manual work on the sanatorium pig farm in return for board and artificial pneumothorax treatment.

This consisted of a full eight-hour day of heavy physical work, and he kept in splendid health without symptoms or loss of weight for one year. One day he developed a common cold in the head with all its usual symptoms and slight fever. His temperature rose to 100° F. on the first day and settled to normal by the seventh day, and I would like to point out the mildness of the pyrexia and its rapid disappearance. Also it is important to note that his symptoms were slight and, beyond the reappearance of

* Read before the Tuberculosis Association, May 19th, 1933.

sputum, non-localising; further, that they rapidly disappeared. An X ray was taken, although there was no marked change in physical signs. His previous film showed a collapsed left lung and a right lung clear of disease; the new film showed a dense hazy opacity the size of the palm of the hand in the right subclavicular region. In fact, a new lesion of considerable size had appeared in his right lung. He was kept on complete rest for one month, during which time all symptoms and constitutional disturbance disappeared and he seemed perfectly recovered, but since a further X ray at the end of that time showed no clearing of the new lesion, a selective right-sided artificial pneumothorax was induced, and he has been back now at the same work for 12 months in excellent health.

Now it will be instructive to picture what would probably have happened in his case had he been fully discharged from the sanatorium, and had not been an artificial pneumothorax case, and as such under close supervision. He would have reported to his tuberculosis officer and have been found to have done well and probably advised to go back to work and to report at stated intervals. He keeps well, but one day he gets this cold, and, as a keen hard-working boy, he would probably have ignored it altogether, or perhaps would have taken one day off work. If it had happened in between his visits to his tuberculosis officer, the latter would probably have heard nothing at all about it. The symptoms disappearing rapidly, he would carry on blissfully unconscious of this new lesion. How long? One cannot say; it may be only for a short time, but experience tells us that it may be many months before definite symptoms from this new lesion appear and cause the patient to seek medical advice. If there are some residual symptoms from the previous lesions the visit to the doctor will probably be longer delayed. Much depends on the patient's intelligence and outlook, and on the efficiency of the individual dispensary's control of its cases. But in any event it is unlikely that the tuberculosis officer will see him until this "secondary" lesion (if I may be permitted to use my own terminology) has turned into a well-entrenched "intermediate." The irreparable damage is done—treatment starts again—and handicapped treatment. For my experience of these "secondaries" is that if they are caught young and energetically treated, often by rest alone, they can usually be healed. The same cannot be said of an "intermediate."

THE ALLERGIC REACTION

To go back to some pathological considerations. I have stated elsewhere my belief that these fresh areas of disease are due to an hæmatogenous deposit of tubercle bacilli in the interstitial tissue of the lung, setting up around themselves an allergic reaction of simple acute inflammation. If this is true, the X ray shadow that appeared in this case had a small core of tuberculosis and a large capsule of simple acute inflammation which cast the main shadow. The fate of this composite lesion depends partly upon the patient's individual resistance to tuberculosis, partly on his environment or treatment, and partly on the intensity of the allergic reaction. The allergic reaction has been assumed to be beneficial; it may be so to some extent, but not entirely. In support of this I quote A. R. Rich, who has devoted so much time to the study of allergy. He says [1]:

> "The damage done by allergy in this disease is very serious indeed. A great part of the tissue destruction in tuberculosis is due to hypersensitivity to the protein of the tubercle bacillus. The prevention of this damage by means of desensitisation might be of great service to many tuberculous patients. I am thoroughly aware of the virtue of inflammation as a protective mechanism. I question here only the virtue of that excessive inflammation accompanied by necrosis which characterises the allergic reaction. . . . Allergy converts the comparatively harmless protein of the tubercle bacillus into a virulent poison."

To return to our composite lesion, either the whole thing heals leaving a minimal scar, or, as the simple inflammation subsides, the tuberculous core spreads into the damaged or necrosed surrounding tissue, and we are left with an active spreading "intermediate" lesion. I believe that the time this lesion takes before it produces symptoms depends on two factors, (1) the rate of spread, (2) the erosion of a patent bronchiole which throws the lesion open to the fauna and flora of the respiratory tract, and permits secondary pyogenic infection to complicate the pure tuberculosis. We see from day to day so many cases who can tolerate the tubercle bacillus and its lesions without symptoms and without constitutional disturbance that it seems we must postulate something of the sort to explain why some patients get all the classical symptoms and others do not. This one example from many cases that I have studied illustrates, I am certain, what happens to the great majority of those cases who do badly after routine institutional treatment when they might have done well. Incidentally, it is the story of the reasonably early case, or indeed almost any case, presenting himself for his first diagnosis.

FIVE SALIENT FEATURES OF RELAPSE

It may be well to review the position and underline the five salient features of relapses of which C.'s case may be taken as a fairly typical example. These five features are as follows:

1. These relapses have no obvious prodromata.
2. The new deposit may in some cases be entirely silent; in most cases the symptoms and constitutional disturbance that accompany it are so slight that they can be too easily ignored; occasionally it is accompanied by a severe reaction.
3. In many cases physical examination conveys but little information, and if the new deposit is accompanied by physical signs these are often evanescent.
4. The symptoms and constitutional disturbance are usually of very short duration and disappear completely.
5. There is an indefinite latent period before the second reappearance of symptoms. And I should like to add that these again will often yield to the mildest treatment.

If it can be agreed that these relapses are a common cause of our ill-success, how shall we meet the problem? The obvious answer is to have much closer clinical and X ray control for the critical two years after institutional treatment. For facts tell us that neither routine institutional treatment nor its adjunct collapse therapy will protect our patients with any certainty from these new lesions. But such a suggestion is rather like the tardy shutting of the stable door. For although it is true that a fresh lesion will usually respond to treatment excellently if caught early, it does necessitate further treatment. This is distressing and discouraging to the patient, oftentimes forcing on him mental, social, and financial hardship and imperilling his already slender chances of getting, or keeping, a wage-earning job. For the country, too, it is economically unsound. We should if possible find a means to prevent these relapses.

The sensitiveness or the allergic state of the patient gives us a clue. Allergy and immunity are two entirely different things. I think Prof. Leroy Gardner has expressed this very happily when he says [2] "Allergy

[1] Trans. Amer. Nation. Tuberc. Assoc., 1931.

[2] Ibid.

and immunity are created by the same condition—i.e., the experience of infection—but their subsequent courses are not necessarily parallel." But since the greater part of these lesions is, I believe, a simple allergic inflammation, beneficial perhaps in some respects but at the same time an excellent hotbed for the spread of their tuberculous core, I believe that if we can render our hypersensitive patients less sensitive we shall to a great extent protect them. And in this belief I have the theoretical backing of Rich in the excerpt I quoted above.

SENSITIVENESS AND DESENSITISATION

If this conception is correct, one reason why one patient relapses and another of the same type and under the same environment does not is because the one is more sensitive than the other. Consider these figures from the South African Institute of Medical Research (Rept. XXX., vol. 5, 1932). Of 93,979 natives presenting themselves for enrolment in the mines, 61,115 were found to be already infected by giving a positive Mantoux reaction to a 1/5000 dilution of old tuberculin. Of these, 3879 gave a ++ response—i.e., were highly sensitive—while 57,236 gave a simple + response—i.e., were less sensitive. Among the highly sensitive the incidence of subsequent clinical tuberculosis—mostly, I think, pulmonary—was 1·03 per cent., while among the less sensitive it was a little more than half that, 0·65 per cent. I am fully prepared to have Heimbeck's experience of the nurses and students at Oslo quoted against me here, but the two situations are entirely different. Heimbeck was dealing with the problem of primary tuberculous infection and resulting clinical disease in non-infected people exposed to the bacillus for the first time. The South Africans, and we, are dealing with the problem of the likelihood of the appearance of secondary pulmonary tuberculosis, and its subsequent relapses, in a previously infected population.

For a great number of our successfully treated cases one of the important factors in their prognosis, then, is their degree of sensitiveness. If this is high they are in greater danger than if it is low. I am fully aware that their degree of immunity is probably as, or even more, important a factor. We are, however, woefully ignorant of tuberculo-immunity, so at present we cannot attempt to influence it. But animals, and again I quote Rich as my authority, can be desensitised by tuberculin, and we know that man can be desensitised to tuberculin by tuberculin. This therefore seems the logical course to pursue.

Desensitisation to large doses of tuberculin is a perfectly safe procedure if carefully controlled, and since it would entail much closer clinical control of the ex-institutional patient I can see but little argument against it. At the worst it can only be a waste of time. There are many things one would like to know. Is the degree of sensitiveness a variable quality, or is one person always hypersensitive and another always hyposensitive? If sensitiveness does vary in the individual from time to time what factors govern this variation? It is extremely interesting to find that it does vary widely in different persons, irrespective of their clinical or pathological condition at the time of making the test. If a person is desensitised, how temporary or how permanent is the loss of allergy is another important question to answer.

Along these lines an attempt is being made to prevent relapse in immediately successfully treated cases. We shall have to wait, I am afraid, at least five years, more probably ten, before results can be tabled.

CHRONIC ULCER OF THE LEG

By A. J. Cokkinis, M.B. Lond., F.R.C.S. Eng.

ASSISTANT DIRECTOR OF THE SURGICAL UNIT, ST. MARY'S HOSPITAL, LONDON; ASSISTANT SURGEON, WEMBLEY HOSPITAL

This paper gives the results of 15 months' intensive experience of chronic leg ulcers, obtained in a special clinic of the surgical unit at St. Mary's Hospital. For the first 6 of the 15 months I had the privilege of assisting Mr. A. Dickson Wright, and thereby of becoming thoroughly acquainted with the treatment practised and advocated by him, and with its results, while for the last 9 months (up to June, 1932) the clinic was under my charge. During this period more than 200 cases of ulcerated legs were seen and treated by me and by my assistants at the clinic. The records of 144 of these have been collected and tabulated, and on the conclusions derived thereby and the lessons learned therefrom this article is based.

ÆTIOLOGY

Of the cases under review, 104 (72 per cent.) are women and 40 (28 per cent.) are men; 99 of the women are married. The age-incidence is as shown in Table I.

TABLE I

Age.	Cases.	Age.	Cases.	Age.	Cases.
Under 20 ..	1	40–49	34	70–79	4
20–29.. ..	6	50–59	45	80 and over..	3
30–39.. ..	21	60–69	30		

The fundamental cause of these ulcers is a disturbance of the vascular balance of the limb, producing venous congestion and stasis.

Repeated *pregnancy* is important in this connexion: of 44 women whose obstetric history is recorded, 8 are childless, 8 had one or two children, 10 had between three and six, 13 had between seven and ten, and 5 had more than ten children each. *Phlegmasia alba dolens* preceded the ulcer in seven women. *Venous thrombosis* or *phlebitis* were causal in only six cases. Contributory factors are long standing—e.g., housework—and excessive weight or height.

Varicose veins constitute the most common cause. In the standing posture their valves become incompetent and their blood flows downwards. Venous congestion and stagnation, with lymphatic and tissue engorgement, must result if the loss of vascular equilibrium is sufficiently severe and prolonged. Of the 144 cases in this series, varicose veins are reported in 90 (62·5 per cent.). Granting, however, that they are causal in most cases, the term "varicose ulcer," so generally applied to the lesion, is inaccurate, since precisely the same condition can and does occur in their absence. Thus, in several of my cases ulceration followed puerperal white leg, venous thrombosis, or phlebitis, without any demonstrable increase or varicosity of the superficial veins. Of special ætiological interest is a *hardening of the veins*, which I was able to feel and demonstrate in several of my elderly ulcer patients without varices. There was no thrombosis, but the venous wall was obviously thickened and could be rolled under the finger. This condition is exactly comparable with the senile hardening of the arteries, and I propose the term "phlebosclerosis" to designate it. Of course, the same thickening occurs in varicose veins, but here it is a response to altered intravenous tension. In my cases the thickening occurred apart from varicosity

and must be regarded as a degenerative fibrosis associated with senility.

Quite distinct from senile phlebosclerosis is the *periphlebitis* to which attention has already been drawn by Dickson Wright, and which I observed in several of my cases. This condition, in which there is marked infiltration of the cellular tissues round the veins, appears to be a result rather than a cause of venous stagnation, although in my cases it seemed to produce an extension of the ulcer. The vein itself remains thin-walled and can be felt as a fluid line, sunk into and bisecting the infiltrated area.

FIG. 1.—The ulcer-bearing area.

Syphilis is a less common cause than it was. A Wassermann test was carried out in ten cases in which gummatosis was suspected, but was definitely positive in only one. *Local trauma* is a common immediate cause of ulceration in a leg already the site of venous stasis. Mechanical trauma was causal in nine of my cases; one followed a burn and one an insect bite, while two developed ulcers after faulty injections for varicose veins.

CLINICAL MANIFESTATIONS

Ulceration of the skin is only one of the results of the disturbed vascular balance, and is frequently accompanied by other lesions of the skin and deeper tissues.

Location.—The great majority of ulcers develop within the area shown in Fig. 1. In 63 of my cases the exact site of the ulcer was recorded, in many of them diagrammatically (see Fig. 2); 21 had malleolar ulcers, 15 had supramalleolar ulcers, and 1 was inframalleolar. Thus, in 59 per cent. the ulcers were on or near the ankle. In the other 26 cases the ulceration was definitely above the ankle, but in only 3 did it extend above the area marked out in Fig. 1. Ulcers on the front and back of the leg are uncommon, there being three of each in this series. The accepted view that "varicose" ulcers occur mostly on the inner side of the leg is borne out by my figures, which show 69 per cent. internal against 31 per cent. external ulcers. A significant fact brought out by this analysis is that chronic leg ulcer affects the left leg more than the right (left leg involved in 65 cases, right leg in 36, both legs in 11). The only explanation I know of is that the pressure of a loaded sigmoid colon on the left iliac vein increases a pre-existing venous congestion.

Size.—In 80 of my cases exact measurements were made with a celluloid grid (Table II.).

TABLE II.—*Area of Ulceration*

Area (sq. inch).	Cases.	Area (sq. inch).	Cases.	Area (sq. inch).	Cases.
¼ or less	14	3–6	16	21–30	2
½ and 1	19	6–10	4	31–40	2
1½ and 2	14	11–20	9		

Some reference to size was made in 36 other cases, 32 of which are described as small, and 4 as large. From this we conclude that a large majority of leg ulcers are small or moderate in size. The occurrence of complete annular ulcers is of no special significance. They are somewhat rare, only four being recorded in the present series. It was once customary to advise amputation in such ulcers, but this is never necessary, as they yield to treatment no less readily than other extensive ulcers.

Number.—Of 139 cases in which the number of ulcers was recorded, 111 had single ulcers and 28 multiple.

TABLE III

Duration.	Cases.	Duration.	Cases.	Duration.	Cases.
1 mth. or less	5	4–6 mths.	5	6–10 years	18
1–3 mths.	8	7–12 „	3	11–20 „	12
		1–5 years	13	21–30 „	6

Duration.—Accurate records of the duration of the ulcer were made in 70 of my cases, as shown in Table III. Thus, in more than half these cases the duration exceeded five years, while in over 25 per cent. it exceeded ten years.

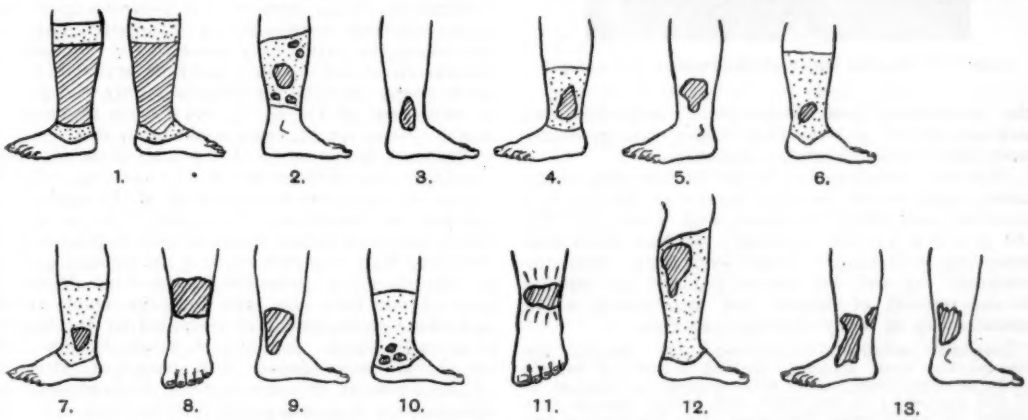


FIG. 2.—Diagrammatic record of 13 cases. (Ulcers shown by shaded areas, eczema by dotted areas.)

Appearance.—This varies with the stage and duration of the ulcer, and is influenced by previous treatment. Most cases give the appearance of a typical indolent ulcer (Fig. 3), with glistening dusky surface and irregular, sharply cut and raised edges, and with sodden and heaped-up cuticle extending a little way over its margins. Recent ulcers are shallow, but they deepen with the passage of time. Old ulcers have indurated edges, sometimes markedly so, and become adherent to underlying structures, dense fibrous tissue binding the ulcer-base to the deep fascia or periosteum. A profuse serous and irritating *discharge* occurs in the stage of extension

of the ulcer; it is only occasionally purulent, and cannot usually be attributed to infection. In actual fact, the development of a profusely discharging ulcer may be regarded as a protective reaction, by which the water-logged limb gets rid of some of its surplus fluid. A heavy, mawkish *fœtor* is present in ulcers of long standing.

Under favourable conditions the stage of ulceration gives place to the stage of *healing*. The surface becomes pinkish and covered with healthy granulations. The discharge diminishes and thickens, and the fœtor disappears. The edges flatten and soften, and new epithelium grows from them to cover

FIG. 3.—Extensive ulcer with pigmentation and eczema.

the granulating ulcer. Surrounding infiltration and œdema subside, and the base of the ulcer gradually frees itself from underlying structures.

Pain was complained of by 45 (31 per cent.) of my cases, being severe or very severe in 32. It is a constant pain which interferes with sleep and with the patient's working capacity. Another distressing symptom is itching. These symptoms, with the unsightly leg and the fœtor, produce the curious mental outlook of despair and introversion which characterises so many of these patients.

Associated conditions.—Associated *skin* changes are perhaps the most striking. Marked *eczema* of various kinds (erythematous, scaly, and weeping) is reported in 37 (26 per cent.) of my cases, but milder degrees were present in many more. In some cases the eczema was limited to the vicinity of the ulcer, but more often it involved the whole or greater part of the "ulcer-bearing" area (see Figs. 1 and 2). *Pigmentation* occurs in the form of brownish macules which coalesce to form large areas of discoloration, especially in the vicinity of the ulcer, and in the "ulcer-bearing" area (see Fig. 3). *Pruritus* is very common, and *dermatitis artefacta* may result. *Alopecia* and *dryness of the skin* are almost invariable. *Œdema* of the ankle and lower part of the leg frequently occurs, although marked œdematous swelling was recorded in only ten of my cases. Quite distinct from the œdema is a *solid swelling* of the limb from actual hypertrophy of the subcutaneous and other areolar tissues, which I think is a consequence of lymph stasis. The last two conditions produce an increase in the girth of the limb, which is sometimes very marked; the œdema can be expected to subside with treatment, but the solid swelling is to some extent permanent.

Associated changes in the *deeper tissues* are less constant. *Periosteal nodes* of the tibia, under the ulcer-bed, have been recognised for a very long time, but a bony change which escaped notice until recently is a *rarefactive osteitis* of the lower part of the leg bones, which must be attributed to atrophy consequent on the disturbed blood-supply. Wright drew attention to *ossification* in the muscles, *fasciæ*, and even the ulcer-bed, but I have had no experience of it. *Deformities of the feet* only occur in old-standing ulcers, and are postural contractures which later become fixed. Talipes equinus is the commonest deformity, but I have also encountered pes cavus (in one case bilateral), talipes valgus, and talipes calcaneus, all attributable to the ulcer. Flat-feet are very often seen in ulcer cases, but the association is accidental inasmuch as both conditions occur in obese women who have to do a lot of standing. *Carcinoma* supervening on an ulcer (Marjolin's disease) is rare; I have only seen four examples, and not one of them is included in the 200 cases seen by me at the St. Mary's Hospital clinic.

TREATMENT AND RESULTS

The treatment of chronic leg ulcers has been one of the great failures of the art of healing. The recognition of this by the lay public produced a crop of quack remedies which benefited no one but the vendors, yet they thrived because we could only offer bed or amputation as effective alternatives. The greatest possible credit is, therefore, due to A. Dickson Wright for his persistent advocacy of ambulatory treatment which, although in use for a very long time, never before received the recognition it deserves. It is obvious that local treatment directed to the ulcer (ointments, caustics, curetting) is quite useless, since it leaves the causative vascular trouble untouched. Only by overcoming the venous congestion and stasis can we hope to heal the ulcer. Actually, there are three procedures by which this may be done: prolonged rest in bed; external compression of the limb; and obliteration of the stagnant varicose veins.

Prolonged rest in bed, with the leg elevated, will heal most indolent ulcers, but it is irksome, consumes time and money, and offers no protection against recurrence. Thus, one of our patients spent two years and three months in bed in the attempt to cure her ulcers, but ultimately came to the clinic with a recurrence of 14½ sq. in.; another healed her ulcer after many months in hospital, only to develop a recurrence of 18½ sq. in. soon after returning to work. Many similar cases could be quoted.

External compression of the limb with an elastic bandage, and obliteration of the varicose veins by injection, constitute the essentials of the ambulatory method of treatment. *Compression* is a remedy which has been rather spasmodically employed for a very long time; its first use may have been suggested by the rarity of ulceration in the most dependant part of the limb—i.e., the foot—in which venous and tissue engorgement is prevented by the support of shoes or boots. In the past, attempts were made to provide compression with bandages, strips of adhesive plaster, or some material impregnated with adhesive and supporting preparations, such as Unna's paste. The proportion of failures, however, was so high that the method failed to receive adequate recognition until recently. Now, thanks to the skill and persistence of Dickson Wright, ambulatory treatment may be said to be established on a rational and successful basis.

In brief, the technique employed by Wright (and continued by me) is as follows. After taking the history and examining and measuring the leg and the ulcer, vertical strips of Elastoplast (an elastic bandage with a tenacious adhesive on one side) are applied to the naked leg to cover the ulcer and so protect it from the edges of the circular turns of the bandage, which would otherwise cut into it and its inflamed margins. In painful cases relief may be given by blowing a thin layer of aspirin powder on the ulcer before covering it. The elastoplast bandage is now applied evenly and as firmly as the patient

will tolerate, each turn overlapping half the previous one. The bandaging starts from just behind the toes and includes the whole foot and leg, up to the tubercle of the tibia; it must be very firmly applied to the lower half of the leg, though it should not be too tight in its upper two or three turns. The patient is instructed to wear a stocking over the bandage, to wash away any discharge which may soak through, and on no account to remove the bandage without instructions. Aspirin tablets, A.P.C. powders, or aspirin and medinal may be prescribed when there is much pain and loss of sleep.

At the next visit, which will vary from three days to a fortnight or more (depending on the size of the ulcer), the elastoplast is removed by cutting down the front with scissors and peeling it off; discharges are wiped off; the ulcer and leg is inspected and measured; and a fresh bandage is applied. An ulcer which is very indolent, especially if it has indurated edges, may be further compressed with a piece of Sorbo-rubber incorporated between the vertical and circular layers of the elastoplast. As the ulcer heals the further attendances will be at increasing intervals. The patient is encouraged to keep about and to return to work.

Obliteration of the varicose veins is, I think, the most important part of ambulatory treatment, as it is the only measure which really strikes at the root of the trouble and which not only helps to heal the ulcer but also tends to prevent recurrence. In the St. Mary's Hospital clinic we employ injections of sodium morrhuate (2 c.cm. of 5 per cent. solution) almost exclusively, as we have found it both safer and more effective than other preparations. I have only seen four serious cases of general reaction to sodium morrhuate in the many thousands of injections which must have been given at the clinic, and all recovered rapidly and without unpleasant consequences. The results of a "missed" injection, in which the solution is injected round instead of into the vein, are rarely as serious as when salicylate or quinine is used. Two or three veins are injected at each visit, except the first, when I make it a rule to make one trial injection in view of the extremely remote risk of a general reaction, and the injections are continued until all the varicose veins are thrombosed and obliterated. Dickson Wright starts the injections from above and works downwards; I sometimes start mine from below and work upwards, but I do not think it matters which method is employed, provided one perseveres with the injections long enough. It is particularly necessary to obliterate what I have called "the ulcer veins"—i.e., veins which can be felt rather than seen in the brawny tissues near the ulcer. My records show that injections of sodium morrhuate were given in 93 of the 144 cases under review, quinine and urethane being used in a few cases which failed to respond or showed intolerance. In many of them the injections were continued for months after the ulcers healed and the elastoplast bandages were given up. This continued use is extremely important, and will frequently prevent recurrence of ulceration.

In legs with extensive varicose veins, and when injections fail to obtain obliteration, *ligature* of the internal and external saphenous veins is strongly recommended. The former is ligatured near the saphenous opening, while the latter can be tied just before it enters the popliteal space. This little operation is done under local anæsthesia, and should be followed by injections of sodium morrhuate.

Skin-grafting by the subgranulation method (burying pieces of autogenous skin under the granulations in the floor of the ulcer) is recommended and used by Dickson Wright in large ulcers, but I cannot agree that this makes any real difference to the rate of healing, certainly in the large majority of the ulcers under discussion, or that it protects the patient against relapse. I grafted skin by the subgranulation method in eight large ulcers, and in only two of them did the procedure appear to benefit the patient; one of these was a large indolent ulcer which followed a burn, while in the other, although the grafting seemed to accelerate healing very materially at first, the subsequent progress was extremely slow, and the ulcer took 14 months to heal completely. Similar very rapid initial improvement can be obtained by the use of elastoplast without grafting.

RESULTS OF WRIGHT'S AMBULATORY TREATMENT

The early results of the sodium morrhuate and elastoplast treatment are usually extremely satisfactory. The venous stagnation is relieved, the pain and œdema disappear, and the ulcer rapidly diminishes in size. This rapid improvement of the ulcer is sometimes astonishing, although some of it must be attributed to the lessened girth of the limb. I find that in no less than 63 of my cases, either rapid or very rapid initial diminution of the ulcer was recorded, and I here give a summary of the early progress of the most successful of these cases:—

1. Ulcer of 36 sq. in. diminished to 18 sq. in. after eight weeks.
2. Ulcer of 14½ sq. in. down to 7½ sq. in. in four weeks, and 2¾ sq. in. in eight weeks.
3. Ulcer of 3 sq. in. healed in five weeks.
4. Ulcer of 18¼ sq. in. (22 years' duration) down to 7½ sq. in. in ten weeks.
5. Ulcers of 17½ sq. in. down to 12 sq. in. in two weeks.
6. Ulcers of 5 sq. in. down to ¼ sq. in. in eight weeks.
7. Ulcer of 8 sq. in. reduced to 3 sq. in. in two weeks.
8. Ulcer of 16 sq. in. down to 4 sq. in. in seven weeks.
9. Annular ulcer of 16 sq. in. reduced to 2½ sq. in. in four weeks.
10. Ulcer of 38 sq. in. down to 9 sq. in. in eight weeks.

Between them, these ten cases show an average rate of healing of over 2 sq. in. per week, the last two actually giving a healing-rate of 3½ sq. in. a week! These, of course, are selected and spectacular cases, but such results, even if only occasional, demonstrate the possibilities of the treatment and explain the enthusiasm with which it has been advocated by its protagonist.

The late results, however, are far less spectacular. Admitting that healing of the original ulcer was obtained in 98 of the 144 cases in this series, and that in 55 of these the ulcer healed in three months or less, one must point out that in 21 cases healing did not occur until after 6–12 months, while in 7 cases the ulcers healed only after 12–24 months' treatment. In the remaining 46 cases the original ulcer failed to heal, although in 28 of them elastoplast and vein injections and other ambulatory measures have been assiduously employed for periods varying between 7 and 36 months.

I compute that some 20 per cent. of chronic leg ulcers remain unhealed, however vigorous the ambulatory treatment, although a proportion of them are improved. The time taken by the treatment and the number of attendances, as well as the ultimate results, are summarised in Tables IV., V., and VI.

The tendency to recurrent ulceration, which is such a marked feature of the lesion, is manifest in cases healed by the ambulatory method no less than in those treated by recumbency. In this series 34 cases of recurrent ulceration were observed, 16 of which had two or more recurrences; in 25 of the 34 cases one or more relapses occurred after healing

was obtained with elastoplast and injections. It is fortunate that these recurrent ulcers usually heal rapidly, if caught early.

TABLE IV.—*Attendances for Treatment of Ulcer (only)*

Attendances.	Cases.	Attendances.	Cases.	Attendances.	Cases.
5 or less	27	16–20	6	36–45	3
6–10	48	21–25	13	46–65	3
11–15	25	26–35	8		

TABLE V.—*Duration of Treatment for Ulcer (only)*

(Attendances for associated conditions—e.g., eczema—are not included)

Length of time.	Cases.	Length of time.	Cases.	Length of time.	Cases.
1 mth.	9	4–6 mths.	42	13–24 mths.	20
2–3 mths.	28	7–12 „	36	Over 2 years.	5

TABLE VI.—*Summary of Results (of Ulcers only)*

Cases considered cured (no recurrence to date)	80*
Cases considered improved	22
Cases considered not improved	28
Result unknown or ceased to attend	14
Total	144

* In 63 of these the ulcers remained healed for 1–6 months, in 11 for 7–12 months, in 6 for more than a year.

But perhaps the great disappointment of the elastoplast treatment is that it often heals the ulcer but fails to improve associated eczema, and even makes it worse; the latter occurred in 20 of my cases. What is more unfortunate is that in 24 cases the elastoplast produced an eczematous condition, which we have called "elastoplast dermatitis," in legs previously free from eczema. Elastoplast dermatitis appears after a period of weeks or months as an acute erythema, with itching and heat, and unless the elastoplast is discontinued, or the limb is protected from it, the skin becomes excoriated and numerous minute or small circular, shallow, and very painful ulcers develop. This dermatitis is especially liable to occur in the upper part of the leg, and is made worse by scratching. Although a distressing condition, elastoplast dermatitis yields readily to preparations such as calamine lotion, and zinc or coal-tar ointment. I do not agree with Dickson Wright that the dermatitis should be ignored, or that it disappears if the elastoplast is persevered with. I have tried this line of treatment with extremely unpleasant results, and believe that the use of elastoplast on the naked skin should be avoided in cases with initial eczema, and promptly discontinued when signs of elastoplast dermatitis appear.

One is reluctantly compelled to admit that elastoplast treatment has its limitations, some of which are perhaps more obvious to others than they would be to the original advocate, and unless these limitations are recognised and understood there is always a danger that a very excellent remedy might in some instances fall into disfavour. I have heard the elastoplast treatment condemned more than once, and several colleagues have told me that they have had to abandon it after considerable trial, as it made the patient's condition worse than it was before. My reply is that before anyone is in a position to criticise a procedure he should be certain that he is employing the correct technique; I am confident that errors of technique are responsible for at least as many failures as any limitations inherent in the treatment.

MODIFICATIONS

My considered view is that, in spite of its limitations, elastoplast or some similar preparation is, when combined with obliteration of varicose veins, the most powerful agent at our disposal for the treatment of chronic leg ulcers. The fact that I have used it in no less than 141 of the 144 cases under review is a sufficient indication of my appreciation of its value. I strongly suggest, however, that it is not essential for the elastoplast to be applied to the naked skin. If the skin tolerates it, well and good; but if initial eczema is present, or an eczematous dermatitis is caused by it, it is my practice to apply the elastoplast over a protective layer of gauze impregnated with zinc ointment or Unna's paste; or sometimes to encase the limb in viscopaste bandages with an elastoplast bandage over them. In cases where the eczema is limited to the top part of the leg, I encase only the lower two-thirds with elastoplast and use calamine lotion or crude coal-tar ointment for the upper eczematous part. By these measures the compressing action of the elastoplast is preserved, while the sensitive skin is protected from its irritating action. The ulcers heal no less readily, and the eczema, whether primary or produced by elastoplast, improves rapidly and often clears up in a few weeks. My records show that during the time the clinic was under my charge we used elastoplast over a protective preparation in 46 cases, and always with satisfactory results.

AFTER-TREATMENT

After the ulcer has healed and varicose veins have been obliterated, some supervision is always necessary. The patient is instructed to return, at first every three months and then at longer intervals; any new veins are injected, and any recurrent ulcer is treated. This supervision should continue for a very long time, certainly for several years. In certain cases some form of permanent support to the leg is recommended by Dickson Wright. If the skin will stand it, elastoplast does admirably, and can be renewed every two months; instead an elastic stocking may be worn (the Bourjeaurd type gave us most satisfaction, but unfortunately has not been obtainable lately), or the leg may be encased in Klebro resin bandage. With the exception of elastoplast itself, I have not found other forms of permanent support very successful in preventing recurrence.

CONCLUSIONS

1. Chronic indolent ulcer of the leg is one of the results of prolonged venous and tissue engorgement, mostly but not necessarily caused by varicose veins.

2. It has a sharply localised distribution, and is frequently a painful and disabling affection.

3. It can be healed only by measures which correct the loss of vascular balance, and even then it is liable to recurrence.

4. The ambulatory treatment comprises compression by elastic bandage and obliteration of varicose veins by injection and possibly ligature. It produces healing of the original ulcer in 80 per cent. of cases, and improves some of the remainder, but it is a tedious treatment which requires much time and patience.

5. The disadvantages of the elastoplast treatment are: (*a*) it fails to heal a fifth of the ulcers; (*b*) recurrence is likely to occur at some future period in between a quarter and half of the cases; (*c*) it tends to aggravate eczema or even to produce it in something like a quarter of the cases. The last disadvantage can be countered by the use of protective preparations

under the elastoplast. The first two disadvantages are not peculiar to ambulatory treatment.

6. The advantages of the ambulatory method overshadow its disadvantages. It is relatively inexpensive, gives early relief, heartens the patient by producing rapid diminution of the ulcer, and, above all, usually saves the patient and the State much waste of time and money.

7. Skin-grafting does not benefit more than a very small proportion of indolent ulcers.

8. Prolonged after-care is most important, and recurrences must be caught early.

THE RELATION OF THE STIPPLED CELL AND THE POLYCHROMATIC CELL TO THE RETICULOCYTE

BY LIONEL E. H. WHITBY, C.V.O., M.D. CAMB., F.R.C.P. LOND.

ASSISTANT PATHOLOGIST TO MIDDLESEX HOSPITAL

AND

C. J. C. BRITTON, M.B. N.Z.

MIDDLESEX HOSPITAL NEW ZEALAND SCHOLAR

(From the Bland-Sutton Institute of Pathology, the Middlesex Hospital)

THE phenomena of polychromasia and of stippling were originally regarded as signs of degeneration in the red cell, stippling especially being referred to as "granular degeneration." But with the discovery of the reticulocyte in supravitally stained preparations it was soon realised that abnormal staining might as easily be a sign of youth as a sign of degeneration. Hawes (1909) brought forward some evidence for regarding the polychromatic cell of a Leishman-stained film as related to the reticulocyte of a vitally stained preparation, and also hazarded the suggestion that the stippled cell was merely a variant of the polychrome. Key (1924) confirmed the work of Hawes in relation to the polychromatic cell, and pointed out that the supravital method of staining is more sensitive in detecting reticular material than is Leishman's stain for polychromasia. But judging from the opinions expressed in standard text-books and from the views given in recent papers on hæmatological subjects there is not the same confident opinion as to the relation of the stippled cell to the reticulocyte. Thus, Krumbhaar (1928) not only fails to mention any connexion between polychromasia reticulocytes and stippling, but states that it is still doubtful whether stippling is a sign of youth or degeneration. Piney (1932) suggests that stippling may be nothing more than nuclear remnants. On the other hand Samson Wright (1931), although believing that stippling is of cytoplasmic origin, does not connect it with the polychromatic cell. Maximow and Bloom (1930) state that "it is possible that the stippled condition is a manifestation of immaturity much the same as polychromasia." Both Key and Hawes showed that the sum of the polychromatic and stippled cells closely parallels the reticulocyte count, and strong evidence of the cytoplasmic origin of the polychrome material of all three cells was obtained by Key (1921) and by Pappenheim (1919). Brookfield (1928) describing the blood changes resulting from the treatment of malignant disease by lead brought forward some evidence suggestive of a relation between stippled cells and reticulocytes, although his attempts at producing stippling by cresyl-blue staining hardly warrant the conclusions which he draws.

The following experiments were therefore designed to confirm the relation of the polychromatic cell to the reticulocyte, to establish the meaning of the phenomenon of stippling, and to determine the relation between the stippled cell and the reticulocyte and polychromatic cell. Our experiments have been designed to provide accurate observations on the numbers of reticulocytes, polychromatic cells, and stippled cells produced by: (1) phenylhydrazine, which results in abundant polychromasia; (2) colloidal lead, which results in abundant stippling; and (3) the superposition of colloidal lead poisoning upon previously produced phenylhydrazine poisoning.

TECHNIQUE

Healthy adult rabbits were injected intravenously with 0·44 per cent. colloidal lead (Crookes collosol lead) and with a 4 per cent. aqueous solution of phenylhydrazine hydrochloride rendered neutral to phenolphthalein with caustic soda.

Reticulocyte counts were originally made by parallel counts with (*a*) living preparations on a warm stage supravitally stained with 0·3 per cent. brilliant cresyl blue in absolute alcohol, and (*b*) with cresyl blue cover-slip preparations which were allowed to dry and then counterstained with Leishman (Davidson, 1928). Experience gave results which consistently agreed so that later reticulocyte counts were usually done with the more convenient dry preparation only.

Polychromasia and stippling were determined by counting the number of these cells in proportion to red cells which were visible in an ordinary dried Leishman-stained blood film. The phenomena are more easily detected in well-washed pale preparations than in those in which a good eosin differentiation is made. Polychromasia and stippling can also readily be detected in an ordinary blood film stained with a methylene-blue preparation as follows: methylene-blue 1·5 g.; 1 per cent. potassium alum sulphate in 50 per cent. methyl-alcohol 0·5 c.cm.; 1 per cent. caustic soda in methyl-alcohol 0·2 c.cm.; methyl-alcohol 100 c.cm.; immerse the film for four seconds, and then wash rapidly in 0·025 per cent. $NaHCO_3$ in distilled water. Wash finally in distilled water and dry between blotting paper.

Counts have in most cases been made daily, sometimes hourly. Percentages have been determined in relation to some 2000 red cells.

Davidson's method for making cover-slip preparations is briefly as follows: a film of a 0·3 per cent. solution of cresyl blue in absolute alcohol is made on one side of a cover-slip, in the same way as one would make a blood film, and is allowed to dry. The film is then lightly polished on a piece of smooth paper. The prepared cover-slips, which should be marked with a grease pencil on the reverse side, keep for a long time. A very small drop of blood is placed on the charged surface of the cover-slip and another prepared cover-slip is dropped on top, so that the blood lies between two cresyl blue layers. After about a minute of contact the cover-slips are carefully pulled apart with a sliding movement, the film is allowed to dry, and is counterstained with Leishman. This method is described in detail because another method which is commonly practised has, in our hands, been found so inaccurate, when compared with living preparations on the warm stage, that it should most certainly not be used. The method to which we refer is that of making a film of cresyl blue on an ordinary glass slide, allowing the film to dry, and then spreading the blood directly on to this. Owing to the rapidity with which the red cells dry it is impossible for the reticular material to become fully stained with the cresyl blue, a process which requires at least 30 seconds moist contact and preferably longer. An error of as much as 500 per cent. may be found with this method.

RESULTS

Intravenous injection of 0·44 per cent. colloidal lead (Crookes collosol lead).—Fig. 1 shows the effect on the red cells, reticulocytes, polychromatic cells, and stippled cells following the intravenous injection of 5 c.cm. of colloidal lead together with the effects produced at a later date by a repeated dose of the poison. Relatively large doses were used in order to produce an acute poisoning. Key (1924) has shown that repeated small doses are almost without

action, and that the chronic lead poisoning of human beings is almost impossible to produce in the rabbit.

The features of Fig. 1 which are worthy of comment and which were similarly produced in two other animals are :—

(*a*) Rapid fall in red cell count with recovery in about 14 days. This effect can be repeated several times in the same animal without causing death.

(*b*) A marked reticulocytic response maximal in four to five days, which is coincident with the appearance of polychromatic cells. The numbers of reticulocytes and polychromatic cells are in parallel proportion.

(*c*) Stippled cells in appreciable numbers appear later than the polychromatic cells. They reach a maximum later, and whereas there is only one polychromatic crisis the stippled cells as a rule continue to appear in successive waves. These waves of stippled cells are also apparent in

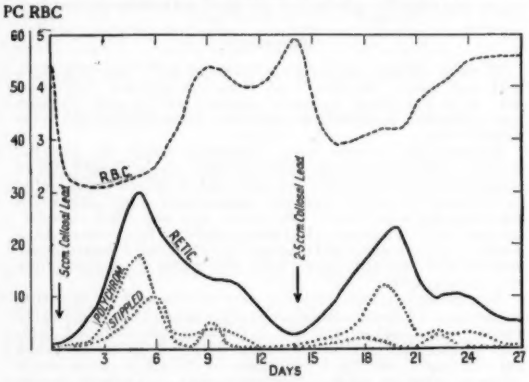


FIG. 1.—Lead poisoning. PC = Percentages of other cells; RBC = Red blood corpuscles in millions.

the results of Key (1924), although he does not comment on the fact.

(*d*) A fairly close agreement between the reticulocyte percentage and the sum of the stippled and polychromatic percentages.

(*e*) Lead produces a microcytic anæmia and numerous normoblasts. Many of the smallest microcytes were definitely stippled in the Leishman films and were reticulated in the supravital preparations.

A chart of absolute numbers of reticulocytes, polychromatic cells, and stippled cells has the same general form as one in which the figures are expressed as percentages, but we have adopted the latter for the sake of convenience.

Intravenous injection of 4 per cent. aqueous solution of phenylhydrazine hydrochloride.—Price-Jones (1911) showed that phenylhydrazine causes a rapid fall in the red cell count and hæmoglobin, which is quickly followed by a rapid and large increase in polychrome cells. The polychromatic cells disappear in a few days coincidentally with the recovery of the red cell count. Price-Jones makes no mention of reticulocytes. We have obtained the same result by giving three intravenous doses of 0·6 c.cm. of a 4 per cent. solution of phenylhydrazine hydrochloride at intervals of two days. The fall in red cells is maximal some three days after the last injection and the count rapidly rises to normal again in about a week.

Fig. 2 shows the percentages of reticulocytes, polychromatic cells, and stippled cells during the recovery phase. The following points deserve consideration :—

(*a*) This form of poisoning causes very little stippling, but there is a marked reticulocyte crisis coincident with the appearance of polychromatic cells and there is a parallel decrease of both these types of cell during the recovery phase.

(*b*) Moderate phenylhydrazine poisoning causes an obvious megalocytic type of anæmia in contrast to the definitely microcytic features which are found in lead poisoning. With phenylhydrazine nucleated cells were rare with the dosage employed.

(*c*) The most obvious megalocytes appeared polychrome in Leishman films and reticulate in the supravital preparations.

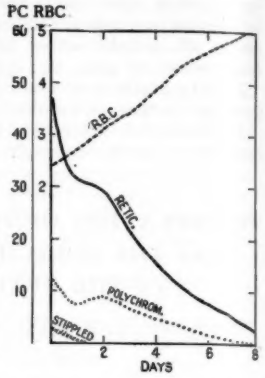


FIG. 2.—Recovery from phenylhydrazine poisoning.

Superposition of lead poisoning upon phenylhydrazine poisoning.—The object of the experiment was to allow comparison of the reaction characteristic of lead in a normal animal with its action in an animal in which a high proportion of reticulocytes was already present. Such an experiment should indicate whether lead was more active on reticulocytes than on normal cells and perhaps give an idea as to whether this action was on circulatory or on bone-marrow reticulocytes.

Fig. 3 shows the changes produced by injecting 7·5 c.cm. of 0·44 per cent. colloidal lead into a rabbit which was at the peak of the reticulocyte crisis induced by poisoning with phenylhydrazine. After the lead injection the blood was examined daily until the reticulocyte count had almost fallen to normal. The following changes were observed :—

(*a*) Within 24 hours the number of stippled cells had risen from 0·2 per cent. to 21·9 per cent., whereas the polychromatic cells had dropped from 30·3 per cent. to 2·3 per cent.—a complete reversal of the relations between these two cells. At the same time numerous normoblasts appeared in the blood.

(*b*) Thirty-six hours later the picture was again reversed, the polychromatic cells being once more predominant. The number of normoblasts was reduced.

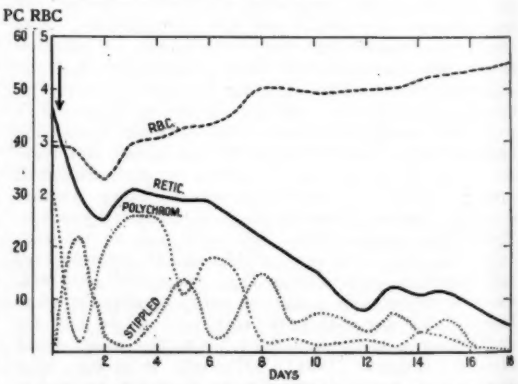


FIG. 3.—Daily record of superposition of lead on phenylhydrazine. 7·5 c.cm. of colloidal lead injected at point indicated by the arrow.

(*c*) Waves of stippled cells were produced in the same way as with simple lead poison, but there was throughout a tendency for an opposite fluctuation in the polychromatic cells.

(*d*) The reticulocyte curve shows in general the same fall as with recovery from simple phenylhydrazine poisoning. The fall is, however, more prolonged, and on the third day there is a small but definite rise. If the reticulocyte curve of lead poisoning (Fig. 1) be superposed on the falling reticulocyte curve during recovery from phenylhydrazine (Fig. 2) this rise with a combination of the two poisons can be seen to be due to the lead.

(*e*) The normoblasts which appeared within 24 hours of the injection of lead amounted to an average of 1·5 per microscopic field. Examination of these cells in Leishman-stained films showed that some 80 per cent. had a stippled cytoplasm. Turning to the supravitally stained preparations, it was seen that every normoblast possessed reticular material which was normal in appearance, and that all simple reticulocytes were indistinguishable from those which one finds in a film from a case of pernicious anæmia which is responding to liver. Reticulum in normoblasts is a normal finding, and is to be expected in view of the polychromatic cytoplasm of the normal normoblast. Valentine (1928) gives very good figures of reticulated normoblasts.

(*f*) Despite the production of numerous stippled cells, the red cell count climbs steadily to normal. If the stippled cell was a damaged and therefore short-lived cell one would expect to find evidence of this in the red cell count. There are no fluctuations in the red cell count, such as would be expected if the waves of stippled cells perished prematurely.

Hourly record of the effect of superposing lead poisoning on phenylhydrazine poisoning.—Having found a rapid change from polychromatic cells to stippled cells in the previous series of animals it was necessary to find out the time required for such a change to take place. If the change was immediate

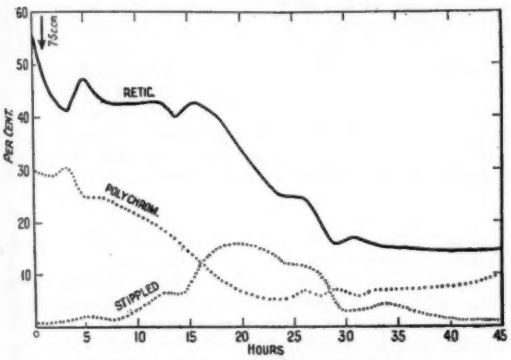


FIG. 4.—Hourly changes with lead (injected at arrow) superposed on phenylhydrazine.

or within a short time after the injection of lead it would be evidence that the lead was acting on the circulating polychromatic cells. (Fig. 4.) The hourly record shows that the maximum change from polychromatic to stippled cells occurs between 18 and 28 hours. Stippled normoblasts were found from the eighteenth hour onwards. A curious feature of this experiment was that between 6 and 12 hours there was a marked outpouring of eosinophil leucocytes. It was possible to find as many as ten in a single field. The eosinophils had disappeared in 24 hours. We can offer no explanation of this.

Comparison of reticulocyte count with a summation of the polychromatic and stippled cell counts. (Fig. 5.)—These curves are constructed from the doubly poisoned animal shown in Fig. 3. The curves are seen to be parallel. The fact that they do not superpose is because the reticulocyte count made by the supravital staining method is more sensitive than polychromatic and stippled cell counts made on a Leishman-stained film. The latter count involves the difficulty of recognising borderline polychromatic cells. Hawes in 1909 first showed the parallel relationship between reticulocyte and polychromatic cell curves, and it was largely due to this evidence that the polychromatic cell, which for many years had been regarded as a degenerate cell, was recognised as a normal young cell and closely allied to the reticulocyte. The work of Hawes threw but little light on the significance of the stippled cell, for his counts of stippled cells were but a mere fraction of the polychrome count. The stippled cell count assumes great importance when it is, as at various stages in Fig. 5, as much as from 2·5 to 11 times as great as the polychrome count. The fact that the

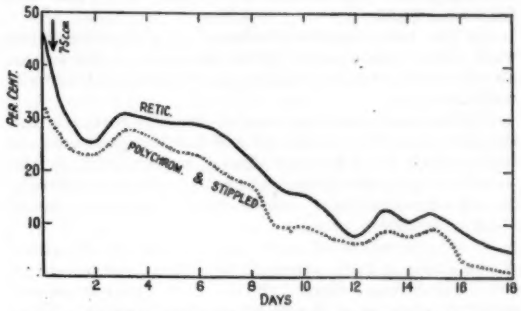


FIG. 5.—Reticulocyte count and summation of polychromatic and stippled cell counts.

summed curve still bears a close relation to the reticulocyte curve is almost proof in itself that polychromasia and stippling are simply crude evidence of reticulation.

Comparison of two different methods of staining for detecting polychromasia and stippling.—The figures for polychromatic and stippled cells given in Figs. 1–5 were all obtained by making counts on dried blood films stained by Leishman's method. Parallel counts made on dried films stained by a methylene-blue method (vide supra) showed that the methylene-blue was much more sensitive than the Leishman stain for the detection of stippling. (See Table.) Nevertheless the total of polychromatic and stippled cells was, within the limits of experimental error, the same in each case.

LEISHMAN-STAINED.			METHYLENE-BLUE METHOD.		
Polychromatic.	Stippled.	Total.	Polychromatic.	Stippled.	Total.
Per cent.			Per cent.		
12·2	5·7	17·9	6	11·5	17·5
11·4	2·5	13·9	7·1	7·1	14·2
16	1·5	17·5	14·3	3·2	17·5
7·5	4·7	12·2	7·3	5·1	12·4
5	2·9	7·9	4·5	3	7·5
6·9	1·4	8·3	6·5	3·2	9·7
31	1·5	32·5	30	3	33
21	5·5	26·5	21	9	30
18·5	2	20·5	14	5·5	19·5
26	2·5	28·5	26	4	30

The Table shows the results of ten parallel counts taken at random from different animals, the observations being made independently by two different observers. The consistency of the results can leave no doubt that the polychromatic and the stippled cell are essentially the same. Methylene-blue has possibly some tendency to aggregate the polychromatic material into granules, but more probably it stains the polychromatic material more intensely so that fine granules, which appear diffuse in a Leishman film, can be identified with the methylene-blue. In methylene-blue preparations the stipples were of all grades from a few coarse granules to minute dots

so fine that they shaded almost imperceptibly into diffuse polychromatic material.

DISCUSSION

From our experiments we have elicited the following facts:

(1) The reticulocytes produced by poisoning either with phenylhydrazine or with lead are, as far as can be seen from ordinary staining, identical with normal reticulocytes.

(2) Summation of the numbers of polychromatic and stippled cells, irrespective of which cell is predominant or how they have been produced, is paralleled by the number of reticulocytes. Discrepancy is undoubtedly due to the supravital method for reticulocytes being a more sensitive process.

(3) Examination of cells which can be identified as the same in both supravitally stained preparations and Leishman films show that polychromatic material, stipples, and reticulum are the same. Thus the stippled normoblasts of a Leishman-stained film are found to be the reticulated normoblasts of a supravital film; the polychrome megalocytes of a Leishman film are the reticulated megalocytes of a supravital film; the stippled microcytes of a Leishman film are the reticulated microcytes of a supravital film. We would emphasise that there is no relation between the form of the reticulum and the form of its manifestation, polychromasia, and stippling, in a Leishman-stained film. Thus, though sometimes in a supravitally stained preparation the reticulum may appear to be aggregated into bars, large-sized dots, or apparent stipples, the Leishman film does not necessarily, nor indeed, commonly show any stippling. Nor is the reticulum of a cresyl blue film that shows abundant stippling by Leishman in any way different from the reticulum of a film which shows only polychromasia by Leishman. Brookfield concluded from the form of the reticulum that stippling could be produced in cresyl blue preparations merely by diluting the stain, but his illustrations are not convincing.

(4) Two different methods for staining ordinary blood films, methylene-blue and Leishman, show different proportions of stippled and polychromatic cells. Yet, the sum total of both cells is the same by the two methods. The detection of polychromasia or of stippling is therefore partly a function of the stain and the two kinds of cells must be intimately connected. We have verified this point with human blood.

There is thus abundant evidence that polychromasia and stippling are both identical with reticulation. One must nevertheless discuss what is the probable reason for the production in some instances of polychromasia and in others of stippling.

Clinical evidence shows that stippling is very characteristic of lead poisoning, but may also be found in severe cases of pernicious anæmia or leukæmia. It is always associated with a considerable amount of polychromasia. This certainly suggests that powerful noxious substances may have a deleterious effect on the sensitive young polychromatic cells, causing an aggregation of their polychromatic material into definite stipples. But we have found that the reticulum in cells, of which the majority were stippled, was in no way different from that in cells of which the majority were polychrome. Moreover polychromasia and stippling can, in many films, be seen to shade imperceptibly one into the other. Lastly, the rapid fluctuations of polychrome and stippled cells in the animals poisoned with phenylhydrazine and lead suggests that the bone-marrow is functioning well whether it is producing polychromatic or stippled cells, and there is no evidence that the stippled cells are different from the polychromatic cells in any essential feature. Why there are alternating waves of stipples and polychromes we are unable to explain.

Key's (1924) graphs also show waves of stippled cells following lead poisoning, although he does not comment on this feature. We consider that stippling is probably only a minor physico-chemical change, and that it would be far more in evidence in clinical medicine if stains other than Romanowsky stains, which are not sensitive detectors of stippling, were used as a routine. As to where the stippling, so characteristic of lead poisoning, occurs, the hourly examinations recorded in Fig. 4 do not suggest that the poison exerts a direct action on the circulating reticulocytes, but rather that the action is on the cells of the marrow. Stippling of normoblasts points to the same conclusion. Furthermore, many workers, including Brookfield, were unable to produce stippling in vitro by the addition of lead to a suspension of red cells of which a high proportion were reticulocytes. We conclude, therefore, that stippling is a minor change in the polychromatic material of the young red cell, the change taking place in the bone-marrow and having no effect on the future life of the cell, that both stippling and polychromasia are but manifestations of reticulation, and that there is no good evidence for believing stippling to be a degenerative process.

SUMMARY

Observations are recorded on animals whose blood contained large numbers of reticulocytes, polychromatic cells, and stippled cells. From these observations it is concluded that: (1) Polychromasia and stippling are both manifestations of the phenomenon of reticulation. (2) The polychromatic cells of Leishman-stained films and the reticulocytes of supravitally stained films are identical and normal. (3) Stippling is the same chromatic substance slightly altered by lead or other poison. The alteration appears to have no effect on the efficiency or life of the cell.

REFERENCES

Brookfield, R. W.: Jour. Path. and Bact., 1928, xxxi., 277.
Davidson, S., and others: THE LANCET, 1928, i., 848.
Hawes, J. B: Boston Med. Surg. Jour., 1909, clxi., 493.
Key, J. A.: Arch. Internal Med., 1921, xxviii., 1921; Amer. Jour. Physiol., 1924, lxx., 86.
Krumbhaar, E. B.: Cowdry's Special Cytology, 1st ed., New York, 1928, i., 307.
Maximow, A. A., and Bloom, W.: Text-book of Histology, 1st ed., Philadelphia, 1930, p. 60.
Pappenheim, A.: Fol. Hæmatol., 1910, ix., 572.
Piney, A.: Diseases of Blood, 1st ed., London, 1932, p. 2.
Price-Jones, C.: Jour. Path. and Bact., 1911, xvi., 48.
Valentine, F. C. O.: Ibid., 1928, xxxi., 473.
Wright, Samson: Applied Physiology, 3rd ed., London, 1931, p. 205.

DURING the past fortnight the Princess Royal has shown practical interest in hospitals in such widely sundered counties as Lancashire, Shropshire, and Essex. She laid the foundation-stone of the final extensions of the Royal Lancaster Infirmary, where she received purses containing £45,535. While staying with Lord Harlech, in Shropshire, she made a private visit to Derwen Cripples Training College and the adjoining Shropshire Orthopædic Hospital at Gobowen, where Dame Agnes Hunt conducted her over the college founded by her. In Essex she laid the foundation-stone of the new Brentwood District Hospital, which is to cost £36,000. The existing cottage hospital at Shenfield Common no longer suffices for the needs of the expanding population.—The Duchess of York has opened an extension, which has cost £20,000, of the Bishop Stortford Hospital. The new buildings give the hospital a total of 61 beds—16 each for men and women, 12 for children, 7 maternity, and 10 for private patients.

PROTEIN SHOCK THERAPY IN UNDULANT FEVER *

BY SINCLAIR MILLER, *D.S.O.*, *M.C.*, M.D. BELF., M.R.C.P. LOND.

CLINICAL PATHOLOGIST WITH CHARGE OF BEDS AND OUT-PATIENTS, HARROGATE GENERAL HOSPITAL; CONSULTING PHYSICIAN, THE CORONATION HOSPITAL, ILKLEY

IN 1918 Alice Evans, working for the public health service of the U.S.A., demonstrated the close serological relationship between the organisms responsible for the diseases known as undulant fever and Malta fever, and showed that there is in practice no justification for making a distinction between them. From this time onwards rapid progress has been made, and many cases of undulant fever have been reported from various countries. The causal organism has been isolated by blood cultures on many occasions, but usually only the agglutination tests are positive. Outside the Mediterranean zone the infection has as a rule been acquired chiefly through the drinking of cow's milk and the handling of infected cows.

SYMPTOMS AND COURSE OF UNDULANT FEVER

There are three characteristic types of fever :—

1. *Undulatory.*—This is the most common type. Febrile periods are marked by waves of remittent pyrexia, of variable lengths, separated one from another by apyrexial periods, during which there is usually an absence of symptoms.
2. *Intermittent.*—Less intense fever, and the general trend of the fever is more regular.
3. *Malignant.*—This is the rare form, and generally ends in death. The onset is sudden, with severe headaches, generalised pain, nausea, and vomiting. The general condition is one of severe toxæmia, the temperature rises to 104° or 105°. After four or five days the patient develops basal pneumonia and dies.

Undulant fever is commoner in males than in females. Dalrymple-Champneys in THE LANCET of April 9th, 1932, gives a preponderance of three males to one female; while in my own series of nine cases, six were males and three females. The disease is said to be uncommon under 5 years old, occurring chiefly between the ages of 15 and 45. Two of my cases were over 45, one being 58 and the other 65.

The characteristic features of the disease are its indefinite duration, irregular course, and low mortality. The onset is insidious; usually the first symptoms noted are lassitude, headache, weakness, and irregular fever. Sometimes the illness begins with catarrhal angina. Drenching night sweats which occur later have a peculiarly penetrating odour. In spite of these night sweats it is remarkable how satisfactory the general condition remains. Usually the patient is not much weakened by the long fever. In two cases recently under my observation the night sweats were of a most distressing character, necessitating nightly, and sometimes twice nightly, a complete change of sleeping-suit and bed-linen, and yet next morning the patient was far from showing the exhaustion one would have anticipated.

After the initial rise of temperature the fever continues for a few weeks or more, often as a somewhat irregular continuum. It then falls by lysis and in some cases remains normal; but more often it rises again when it has reached normal or just before it has reached normal, and continues with one or more waves lasting from one to four weeks. It then decreases; after a period of two to four months it becomes and remains normal. In some cases the waves are separated by completely afebrile periods of one to two weeks or more. In addition to this wave-like course the fever is as a rule characterised by important daily variations. The pulse is often relatively slow, there is commonly enlargement of the spleen, and perhaps general enlargement of the glands. Hardly ever is there a rash. In some cases during the course of the illness there is a vesicular outbreak in the cavity of the mouth; bronchitis is not infrequent. Diarrhœa may occur, but constipation is more usual. In some cases there is a tendency to nasal and intestinal hæmorrhage. Often there is pain in different parts of the body without pronounced objective changes. The duration of the disease is very variable. In my series of cases one patient gave a history suggesting a six months' duration, another four months. It is difficult as yet to say how mild the condition may be, for some cases will pass by undiagnosed. W. M. Simpson and E. Fraizer [1] in Ohio found in one case convincing evidence that the disease had been going on for eight years.

Diagnosis has often to be made from typhoid fever, influenza, malaria, tuberculosis, rheumatic fever, and subacute bacterial endocarditis. In any case of pyrexia of unknown origin the possibility of undulant fever should be considered. Routine agglutination of all sera from cases of pyrexia of unknown origin against *Brucella melitensis* and *Br. abortus* has resulted in the identification of a considerable number of cases of undulant fever. A positive agglutination against *Br. abortus* in a titre of 1 in 80 or over is accepted as definite evidence of infection, the clinical findings being consistent. Generally the titre runs up to well over 1 in 1000, and there is usually a collateral agglutination of the *Br. melitensis* in a lesser degree. It is well to remember, however, that there may be a total absence of agglutinins in the blood in the cases of well-established undulant fever. Such cases are, of course, the exception.

TREATMENT

The most important factor is prophylaxis, which consists chiefly in the pasteurisation of milk, which destroys the causative organism. According to most authorities treatment during the disease is unsatisfactory. Vaccines have been used. In my series of cases I have consistently used protein shock therapy, giving a T.A.B. injection intravenously and repeating it every three to five days. The following is a brief summary of the cases.

CASE 1.—Case of Dr. Laura Veale, of Harrogate. Admitted to the Harrogate Investigation Clinic in May, 1932. Woman, aged 62, history of recurrent pyrexia for at least six months. The illness began with œdema of face, spreading into the throat. No physical signs, save loss of weight and anorexia. On admission the blood showed a mild anæmia, with a leucocyte count of 10,000, with a predominance of polynuclear leucocytes. Serum agglutinations gave a positive result against *Br. abortus* 1 in 250. There was a slight degree of pyuria. On admission she had a swinging temperature which reached 102° F. After the first T.A.B. injection the temperature became normal and remained so; recovery was uneventful.

CASE 2.—Case of Dr. C. W. C. Bain, of Harrogate. Man, aged 30. Admitted to the clinic suffering from pyrexia of unknown origin. There was a ten days' history of pyrexia, headaches, and constipation. Routine blood count gave a normal blood picture, save a low white cell count (4000, with 65 per cent. lymphocytes). Serum agglutination gave a positive result against *Br. melitensis* 1 in 5000. On admission patient had a swinging temperature between 101° and 102° F., persistent headache with general malaise. He had an outbreak of herpes labialis lasting seven to ten days. The illness showed no signs of abating for three weeks, at the end of which an injection of T.A.B. was given. Improvement was rapid. After the second injection of T.A.B. the temperature became normal and remained so.

* Abridged from a paper read before the Society of Medical Officers of Health of the West Riding of Yorkshire.

[1] Jour. Amer. Med. Assoc., 1929, xciii., 1958.

CASE 3.—Seen in consultation with Dr. H. Hannigan, of Stockton-on-Tees. Man, aged 35. History for previous six weeks of intermittent pyrexia and headache. No presenting symptoms. Blood culture sterile, low white cell count. Serum agglutinations gave a positive result to *Br. abortus* in titre of 1 in 1250 and against *Br. melitensis* in lower titre. Protein shock therapy suggested. After the third intravenous injection of T.A.B. the temperature became normal and remained so. No relapse.

CASE 4.—Case of Dr. W. E. M. Ede, of Worcester. Man, aged 28, remittent pyrexia. Serum agglutinations gave a positive result in high titre against *Br. abortus*. The condition continued unabated for three months, when T.A.B. vaccine was given intravenously with marked reaction; temperature rose to 105° F.; the following morning it sank to subnormal. Convalescence was uneventful.

CASE 5.—Seen in consultation with Dr. T. B. Hearder, of Ilkley. Woman, aged 45. History of pyrexia for three weeks, commencing with symptoms resembling appendicitis. No physical abnormality found. Temperature rose to 102° F. at night. Blood culture sterile; urine gave a scanty growth of *Staphylococcus albus*. The blood count showed a mild degree of simple anæmia with a low white cell count (4300, with 48 per cent. lymphocytes). Serum agglutinations gave a positive result to *Br. abortus* 1 in 320, *Br. melitensis* 1 in 160. Injections of T.A.B. were given, but improvement, though steadily maintained, was slower than the other cases quoted.

CASE 6.—Case of Dr. F. P. Gibson, of Ilkley. Man, aged 58, was admitted to the clinic in June, 1932, having been ill for three months. The illness commenced as "influenza" with nephritis, from which the patient partly recovered, and was again ill six weeks later with pleurisy. The pyrexia, which had never left him, became more marked, and night sweats were very troublesome. On admission, vomiting was a marked feature. There was albuminuria with granular and hyaline casts, and some pus and blood in the urine. The blood showed a mild degree of anæmia. The blood-urea figure was 44 mg. per 100 c.cm. Serum agglutinations gave a positive result against *Br. abortus* in a dilution of 1 in 2560, and against *Br. melitensis* in a dilution of 1 in 1800. In the presence of kidney damage, treatment by T.A.B. injections was begun with caution. The results were encouraging, and after five injections the patient was able to return home well advanced in convalescence.

CASE 7.—Case of Dr. H. Bailey, of Horsforth. Man, aged 52, was admitted to the clinic in January, 1933. The illness began two and a half months previously. Headache and pyrexia were the chief complaints, but on two occasions the patient was very ill with a high temperature and severe diarrhœa. These attacks lasted four days and two weeks respectively. Serum agglutinations done on admission gave a positive result against *Br. abortus* in a dilution of 1 in 1250, and against *Br. melitensis* in a dilution of 1 in 250. There was a mild degree of anæmia. One injection of T.A.B. was followed by a fall in temperature to normal. It never rose again, and recovery was rapid.

It will be seen that in all these cases the result of treatment with T.A.B. has been uniformly good, while in three of them its effect was dramatic, and the illness was brought to an abrupt termination by one injection only. There have been no recurrences.

Clinical and Laboratory Notes

UNDULANT FEVER OF THE ABORTUS TYPE TREATED BY PROTEIN SHOCK

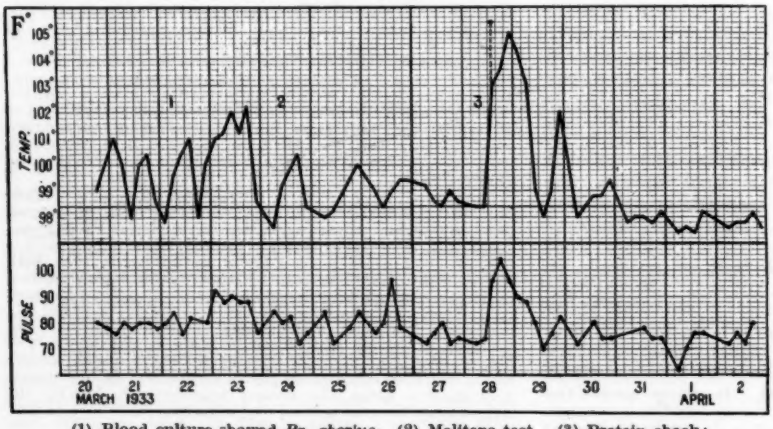
BY PHILIP MANSON-BAHR, D.S.O., M.D. CAMB., F.R.C.P. LOND.

PHYSICIAN TO THE HOSPITAL FOR TROPICAL DISEASES, LONDON

THE various discussions which have taken place recently on the subject of undulant fever of the *abortus* type in England show that the subject is one of general and increasing interest; but in the matter of treatment there has apparently been so far no consensus of opinion. At the meeting of the epidemiological section of the Royal Society of Medicine on Jan. 24th last, Dr. Sinclair Miller, of Harrogate, mentioned the favourable results that he had obtained in cutting short this prolonged fever by means of protein shock. I now wish to record a very acute case of undulant fever of the *abortus* type, in which the diagnosis has been absolutely established by the isolation of the organism—*Brucella abortus*—from the blood, and in which the fever was cut short abruptly by means of one injection of 50 millions T.A.B. (typhoid and paratyphoid organisms). Although this is an isolated observation, I feel that results have been so dramatic and apparently so permanent that the case should be recorded as a means of inducing others to try out this method of treatment.

The patient, a man 47 years of age, a professional engineer, had served in Mexico for a number of years, but had returned to England in August, 1932, and had resided in Lingfield, Surrey, since that date. He had apparently been in poor health since the commencement of Jan., 1933, and on Feb. 26th his illness commenced with a rigor and a temperature of 103° F., which was attributed to malaria, and with some justification because he had previously suffered from this infection. I first examined him on March 5th after he had passed through a series of these rigors. His spleen was then definitely enlarged—no signs of malaria could be found in his blood—but he had already taken large doses of quinine. During the next week there was no response to treatment with quinine, Atebrin, or Plasmoquine therapy. The rigors continued. I tested his serum on March 19th in my laboratory and then found that it agglutinated *Br. melitensis* in a high dilution, and also cultures of *Br. abortus* up to 1 in 1600. The diagnosis of abortus fever having been established, he was admitted to the Hospital for Tropical Diseases on March 20th.

DR. MANSON-BAHR: *Temperature and Pulse Chart from March 20th to April 2nd.*



(1) Blood culture showed *Br. abortus*. (2) Melitene test. (3) Protein shock; T.A.B. 50 millions; rigor 12.30 P.M.

The serum reactions were further investigated by Prof. G. S. Wilson, of the London School of Hygiene and Tropical

Medicine, who found that the serum then (March 22nd) agglutinated *Br. abortus* in as high dilution as 1 in 10,000 and *Br. melitensis* 1 in 5000, and furthermore, that by the absorption test the absorption of agglutinins to *Br. abortus* was quite complete. The "melitene" reaction with extracts of cultures of *Br. abortus* and *Br. melitensis* was performed on March 24th and a delayed positive intradermal reaction was obtained with both organisms whilst the inflammation remained for 48 hours after the time of inoculation and the reaction took 12 hours to become visible. On March 22nd blood culture (5 c.cm.) was taken under paraffin and submitted to Prof. Wilson. He reported that no growth occurred for 19 days, but after this time a pure culture of *Br. abortus* developed. The organisms were found to be CO_2 sensitive, completely failing to grow under aerobic conditions, but growing freely in the presence of 10 per cent. CO_2. They produced abundant H_2S for at least four days, and reacted to thionin, basic fuchsin, and methyl-violet, like *abortus* of the bovine type. They were agglutinated by a mono-specific *abortus*, but not by a mono-specific *melitensis* serum. From these results it appeared proved that the responsible organism was *Br. abortus*.

On March 28th—i.e., one month from the time that the fever had run its remittent course (see Figure)—the patient was injected intravenously with 50 millions T.A.B. The temperature, which was on the normal line at the time that the injection was made (which was at 12 noon), within an hour rose to 105° F. and actually reached 105·4° F. at 4 P.M. As will be seen by the Chart, the reaction was a very severe one, and the temperature remained between 104° and 105° F. for the next 12 hours. There was a secondary reaction and the whole shock lasted altogether 30 hours. At the end of this time the patient was very exhausted, the pulse was feeble but regular (70 to the minute), and it took three days for him to recover his equilibrium. During the shock the spleen retracted beneath the ribs and could no longer be palpated. By April 1st the patient was convalescent and there has been no rise of temperature since. It would therefore appear that the protein shock treatment terminated the fever abruptly, even in an acute case of this infection and six days after the organism had been proved to be present in the blood stream.

The patient has been seen recently (May 7th, 1933) and he is in excellent health, has put on weight, and is robust in every way. The spleen is no longer palpable. His serum now agglutinates *Br. abortus* and *Br. melitensis* 1 : 800. There has therefore been a reduction of the titre from 1 : 10,000 when it was tested on March 22nd.

I am indebted to Dr. P. C. V. Bent, of Lingfield, Surrey, for referring this case to me.

CONGENITAL DEFECT OF THE PECTORAL MUSCLES

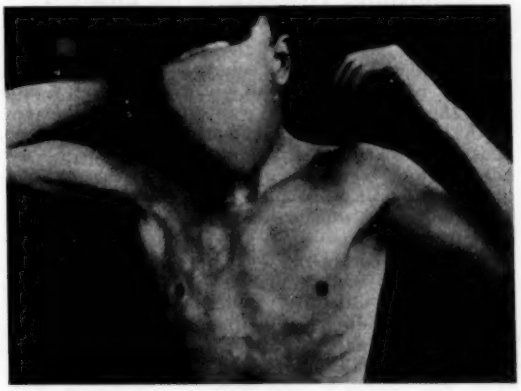
WITH A BIBLIOGRAPHY

BY STANLEY ALSTEAD, M.D. LIVERP.

EXTRA DISPENSARY PHYSICIAN, WESTERN INFIRMARY, GLASGOW

BIBLIOGRAPHIES of this condition have been published from time to time. Cases on record up to the year 1902 were collected by Bing.[1] From 1902 to 1911 the bibliography was continued by Clarke.[2] A series of eight cases of various types was described in 1923 by Morley,[3] who stated that there were then about 220 cases on record. Further examples of this abnormality which have been recorded since 1923 are given below.

Case Report.—A youth, 17 years of age, attended the dispensary complaining of a cough following influenza. Defective development of the pectoral muscles was discovered during routine examination. The whole of pectoralis minor and the pectoral portion of pectoralis major were absent on the right side. In certain positions of the arm a fold of skin became prominent in the midaxillary region suggesting the existence of a fibrous band, possibly a vestige of the undeveloped muscles. The clavicular head of pectoralis major and also the deltoid muscle of the same side were considerably hypertrophied. Muscular power in the right arm and shoulder was apparently



Congenital absence of pectoral muscles and pectoralis major (pectoral part) on right side.

unimpaired, and the patient suffered no disability from the malformation. The nipple was present on the affected side, but it was not quite so prominent as on the left side. The chest wall was much flattened on the right anteriorly, but the right costal margin protruded and the second and third chondro-sternal junctions were more prominent than normal. The back was unaffected, and there was no scoliosis. Except for the absence of muscle shadows in the right pectoral region no further abnormality was detected in the chest by X ray examination.

The patient's hair showed a peculiar distribution, extending fully half-way down the forehead, and there was webbing of the toes. These characteristics were regarded as stigmata of degeneration.

REFERENCES

1. Bing, R.: Virchows Archiv., 1902, clxx., 175.
2. Clarke, E.: Jour. Anat. and Physiol., 1915, xlix., 155.
3. Morley, E. B.: THE LANCET, 1923, i., 1101.

BIBLIOGRAPHY (1923–33)

Sczawinska, W.: Nourisson, 1923, xi., 187.
Hyde, J. M.: Jour. Amer. Med. Assoc., 1924, lxxxiii., 121.
Lake, G. B.: Med. Jour. and Record, 1924, cxix., 552.
Bennett, C. B.: Jour. Bone and Joint Surg., 1924, vi., 583.
Hall, G. A. M.: China Med. Jour., 1925, xxxix., 224.
Baum, L.: Deut. Zeit. f. Chir., 1925, cxci., 302.
Jones, H. W.: Brit. Med. Jour., 1926, ii., 59.
Melzner, E.: Arch. f. Klin. Chir., 1927, cxliv., 131.
Barge, J. A. J.: Anat. Anz., 1927, lxiv., 102.
Christopher, F.: Jour. Bone and Joint Surg., 1928, x., 350.
Newell, A. G.: Brit. Med. Jour., 1929, i., 1040.
Williams, G. A.: Jour. Bone and Joint Surg., 1930, xii., 417.
Aimes, A., Estor, H., and Todorovitch, B.: Rev. d'Orthop., 1931, xviii., 64.
Minellono, J. A.: Dia. Méd., 1931, iii., 724.
Pétridis, P.: Rev. d'Orthop., 1931, xviii., 669.
Menezes, M.: Med. Contemp., 1931, xlix., 403.

LAST year Weston-super-Mare Queen Alexandra Memorial Hospital had an average of 54 beds occupied daily, and the patients' stay averaged 18·73 days, at a weekly cost of £3 3s. 9*d*. The hospital is now a recognised training school, and in the 12 months ending with May, 1933, there were 100 applications for probationership, 13 of whom were accepted. Eight were successful in passing the school examinations and entered the wards. A clinic for mental hygiene and nervous disease has been opened.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF UROLOGY

AT a meeting of this section on May 25th, with Mr. HUGH LETT, the president, in the chair, a discussion took place on

Perurethral Treatment of the Enlarged Prostate

Mr. JOHN EVERIDGE said that little had been written on the method in this country—largely, perhaps, because prostatectomy had given such good results that there was a reluctance to adopt alternatives. With extravesical enlargements of the prostate, causing urinary obstruction associated with soft adenomatous glands, perurethral diathermy was likely to be unsuccessful. With fibrous prostates, however, and in some cases of cancer of the prostate its wider application seemed to be reasonable. Three varieties to be considered were: (1) electro-coagulation, which was an adaptation of Edwin Beer's method, and included Collings's technique; (2) diathermy punching, including the methods of Walker, Kirwin, Bumpus, and Caulk; and (3) resection, as developed by Davis, McCarthy, Stern, and Canny Ryall. Whichever was adopted, the same preliminaries were required as for prostatectomy; certainly the renal function tests must not be omitted. Locally, a very precise investigation of the bladder neck and of the posterior urethra must be made with the cystoscope and urethroscope. An estimation of the residual urine was the critical test of immediate defect, and also marked progress in convalescence. In selecting cases for perurethral treatment there were two main considerations: (*a*) The kind of bladder-neck obstructions suitable for it; these included intravesical projections of adenomatous glands, median bar, fibrotic prostates, obstructions left by previous prostatectomy operations, and also sometimes carcinoma or adenomatous extravesical enlargements. (*b*) The type of patient; those suitable included people who could not afford the period of invalidism required for prostatectomy, and those suffering from cardiovascular, renal, respiratory, or other disorders.

Mr. Everidge said he began to perform electro-coagulation in 1926, and for his later work designed electrodes which were stiffer in the shaft than those employed for fulguration. The first case he recorded on which he used the method was in January, 1927. The patient had 16 oz. of residual urine, and had had two attacks of acute retention. Since then there had been no trouble whatever, and a catheter passed recently for diagnostic purposes did not yield any residual urine at all.

Two objections had been urged against perurethral diathermy. First it had been said that the results came about only slowly, since time was required for the tissues to slough away. He did not admit that this was quite true, though he agreed that it might be a month, or even two, before all the tissues had been shed. The second supposed disadvantage was the onset of sepsis. In his experience the associated sepsis had been mild—usually a mere symptomless pyuria—and he had not had any case of ascending infection. Between 1928 and 1930 he made extensive trials with diathermy punches, but he usually found it difficult to grasp the primary piece of gland. After experiments on the cadaver he gave up the use of the punch, for he felt that even if it did not damage the ureter directly it increased the likelihood of ascending infection. As regards resection, the technique was by no means simple—there were many things which might go wrong—and not until he had performed the operation at least ten times did he feel the necessary confidence. One should be careful not to attempt to accomplish too much at a sitting. So far he had had only one case of alarming hæmorrhage, but there had been mild sepsis, including epididymitis after electro-coagulation. Seventy-five of his cases had been carefully recorded and followed up. The average age was 64½ years—one was 90. In 23 of them there was acute retention of urine, in eight retention with overflow. Three had carcinoma; one had a blood-urea of over 200 mg. per 100 c.cm., and there were three with post-prostatectomy obstruction. Three died after the operation, but they would certainly have died after open operation, and so, he thought, would many of the others. The results in this remainder were very favourable: in 15 suprapubic drainage was necessary before it was considered wise to touch the prostate; all subsequently healed and were passing their urine normally except one, a patient with cancer, who died shortly after his return home.

In 53 cases electro-coagulation alone was used, in four only the diathermy punch, in three a combination of electro-coagulation and diathermy punch, in 13 wire-loop resection alone, in two electro-coagulation and resection. Mild incontinence usually followed for a few days after resection, but all the patients who had had incontinence regained perfect control. In two of his earliest cases Mr. Everidge carried out subsequent prostatectomy; at that date his perurethral technique was not mature. With regard to the duration of the results, he had had one case of six and a half years' duration, and others nearly as long. The operation of prostatectomy, however, was on a firm basis, and had not so far suffered serious challenge by these modern methods; certainly he did not believe it was obsolescent.

Mr. KENNETH WALKER said he began to work with electrodes in dealing with minor degrees of obstruction in 1922, and the method certainly occupied an important place. Though they seemed enthusiastically favourable to prostatectomy, medical men on approaching the "prostatic age" were strongly averse to having it done on themselves. He did not regard the danger of sepsis by any means lightly; it was the complication of which he was most afraid, for he had always regarded the prostate as a great distributing centre of sepsis. Having studied sections of various parts of the urinary tract of patients who had died five or six days after prostatectomy, he was convinced that there was a great wash of organisms along the lymphatics from the capsule of the prostate after the operation. He had had little trouble from hæmorrhage. A difficulty all operators experienced was failure to relieve obstruction, sometimes perhaps due to lack of courage to remove sufficient tissue. In the selection of suitable cases skilled cystoscopists were sometimes mistaken about the size of an intravesical projection. Not always was it realised that a prostate might shrink from drainage of the bladder and from being cut into. Many prostates which at first seemed too large for perurethral treatment turned out to be quite suitable for it.

Mr. T. E. HAMMOND said he had carried out this newer method since 1921. At that time he was using the diathermy punch, which he contended was applicable to the type of case in which obstruction

was at the bladder neck and appeared not to be progressive. It was suitable for the prostatic bar, for the small fibrous prostate, and for a certain type of large fibrous prostate which followed inflammation. By the new technique one could be certain of what one took away, but this applied only to the neck of the bladder. In over 20 cases he had used Ryall's resectoscope for obstructions at the bladder neck. In 4 of these there was some enlargement of the lateral lobes, but prostatectomy was contra-indicated. He had used the method in 54 cases, and 3 of the patients died after the operation. In 2 there was severe secondary hæmorrhage. It was impossible to remove the whole of the lateral lobes through the resectoscope, and he had found great difficulty in estimating the size of these lobes. The results of resection could not be compared with those of prostatectomy, for the resection method had been in vogue for only two years, but it was useful to bear in mind that the symptoms of prostatic enlargement might vary surprisingly in the course of years.

Mr. T. J. MILLIN said he had followed the pure resection technique in 160 cases; they included all kinds, with some hopeless risks. The ages varied from 44 to 87, and there were ten deaths. The main cause of death was certainly sepsis, though some succumbed to renal failure. Though this operation could not be said to replace prostatectomy, it had a distinct value.

Mr. E. W. RICHES said his experience had been in the endoscopic type of resection with the McCarthy type of electrotome. Wherever possible he avoided coagulation to stop bleeding, since he considered that it led to post-operative pain. Before deciding to try any new method one must consider what advantages it promised. In certain cases of carcinoma of the prostate perurethral treatment had proved of considerable value. One method of selection for such treatment was to take those cases which, for local reasons, were relatively unsuited for suprapubic removal; another was to take those which, on general grounds, were bad risks for the suprapubic method. But neither of these bases was fair when assessing the value of the new method: the right method of selection of cases was on the merits of the operation alone as revealed by experience. In the bad risk type of case he considered that the risk with the perurethral treatment was only slightly less than with suprapubic removal.

Mr. F. M. LOUGHNANE said that his 36 cases in which he had used the newer method included ten which were bad from the point of view of urea concentration, while in several of the others the cardiovascular condition was not good. He had noted extravasation of urine in 1 case, hæmorrhage in 3, sepsis in 10. Seven of the last were so septic beforehand that he carried out suprapubic drainage for as long as two or three months before operating. He agreed that sepsis was the most serious complication. It had been said that if serial sections of clinically benign prostates were made, 20 per cent. of them would be found to be malignant; three in his series were so. A drawback to routine resection was that a large number of cases which might be cured by routine suprapubic removal of the prostate were proceeding to develop carcinoma.

Dr. G. B. BATTEN referred to a patient 60 years of age who had a 63 oz. retention, who was operated upon by this new method by Mr. Everidge, and though he still had 8 oz. of residual urine, it did not inconvenience him, and he had put on a stone in weight. If in even 10 per cent. of cases this method could supersede ordinary prostatectomy, it would be a great boon to elderly men. As an electrotherapist, it was his view that the profession was now only at the beginning of diathermic treatment.

Mr. W. K. IRWIN expressed himself as opposed to perurethral operations on any case of enlarged prostate; with care, the suprapubic operation gave as good results as the perurethral, and the mortality could be brought down to 4 per cent. The latter operation was only an incomplete one.

Mr. H. P. WINSBURY-WHITE remarked on the large raw surface left behind in the perurethral method. It violated the principle that a raw bladder surface should never be left without suprapubic drainage.

The PRESIDENT thought these operations were not for every surgeon to undertake. The results varied directly with the experience of the operator in urethral instrumentation.

Mr. EVERIDGE briefly replied.

MEDICO-LEGAL SOCIETY

AT a meeting of this society, held on May 25th, the chair was taken by Lord RIDDELL, the president, and a paper was read by Mr. W. G. EARENGEY, K.C., LL.D., on the

Legal Consequences of Shock

He pointed out that the general rule of the law of damage was that, whenever one person suffered loss or injury as a result of a breach of duty on the part of another, he had a right to such pecuniary damages as would compensate him for that loss or injury. If there was negligence, the test was: would any reasonable person have foreseen that the act or omission would or might probably cause danger? If so, the liability of the wrong-doer was limited to such damage as was directly traceable to his negligent act. If the damage was, in the legal term, "too remote," the judge must withdraw the case from the jury. While juries were deemed capable of determining most questions of fact, some matters were said in law to be incapable of assessment in terms of pecuniary damages; one of these was emotional suffering, and the plaintiff could only sue successfully if he could prove physical impact or emotion coupled with bodily illness. This ruling might have arisen from the procedure in the courts, up till 80 years ago, whereby neither the plaintiff nor the defendant could give evidence, but each had to support his case by the evidence of others. Moreover, in those days even doctors had taken little interest in what they had rather contemptuously called "nerves." The attitude of the law was changing with the advance of medical science, and lawyers were not slow to avail themselves of any progress when it was sufficiently founded.

Mr. Earengey then traced historically the important cases on this subject, starting with Allsop *v.* Allsop, 1860. In this case the defendant had imputed unchastity to a wife, with the effect that she became ill. Special damage had had to be proved as, at that time, such an accusation had not been actionable without such proof. Chief Baron Pollock had held that the damage was insufficient, and had added: "We ought to be careful not to introduce a new element of damage, recollecting to what a large class of actions it would apply, and what dangerous use might be made of it. . . . It may be laid down that illness arising from the excitement which the slanderous language may produce is not the sort of damage which forms a ground of action." In the case of Lynch *v.* Knight, 1861, the decision in Allsop *v.*

Allsop had been approved, and Lord Wensleydale had observed:

"Mental pain or anxiety the law cannot value, and does not pretend to redress, when the unlawful act complained of causes that alone; although where a material damage occurs, and is connected with it, it is impossible that a jury in estimating it should altogether overlook the feelings of the party interested. For instance, where a daughter is seduced, however deeply the feelings of the parent may be affected by the wicked act of the seducer, the law gives no redress unless the daughter is also a servant."

It was difficult to understand why a jury which could assess, in seduction cases, first the "material damage" and then the additional compensation for "mental stress" should not be able to assess the latter item alone. The real difficulty seemed to be not one of assessment but of legal proof of mental suffering.

DEVELOPMENT OF THE LEGAL CONCEPTION

Mr. Earengey then described the facts in the Victorian Railway Commissioners *v.* Coultas and Wife, Pugh *v.* London Brighton and South Coast Railway (1896), Wilkinson *v.* Downton (1897), and Janvier *v.* Sweeney and Another. There had been evidence that Mrs. Coultas suffered clearly physical injury as a result of the shock, but, on appeal to the Privy Council, the damages had been held to be too remote. That court also seemed to have treated mental and nervous shock as synonymous. The correctness of the decision had been hotly debated, and in 1890 the Irish courts in Bell *v.* Great Northern Railway Company of Ireland had refused to follow it. In Pugh's case Lord Esher, M.R., had pointed out that the Victorian case had no application, as that had been founded on negligence, whereas Pugh's was a case of the true construction of a contract of insurance. In 1901 a divisional court had given an important decision in Dulieu *v.* White and Sons. A van had been negligently driven through a front window of a public house where a pregnant woman was serving. She had become seriously ill, and some two months later had given premature birth to an idiot child. She had succeeded in her claim. Kennedy, J., had observed that "nervous" was the correct epithet for bodily illness produced through terror, and that merely mental pain, unaccompanied by injury of the person, would not sustain the action. He had added that fear for personal safety was essential, apparently forgetting Pugh's case. In Brandon *v.* Osborne Garrett and Co., Ltd., 1924, damages had been awarded to a husband and wife, the wife having reasonably believed that her husband was in danger from falling glass, and having pulled him away, and in so doing strained her leg and brought on a recurrence of thrombosis. In Hambrook *v.* Stokes Bros., a pregnant woman's husband had been awarded compensation for her death resulting from fright and anxiety for her child, being in no danger herself. Lord Atkin had made some valuable observations which, although perhaps only dicta, probably indicated the lines on which future decisions would go. He had definitely dissented from Kennedy J.'s opinion that the shock must be associated with personal fear, and had said that he saw no reason for excluding a bystander who received injury from apprehension or sight of damage to a third party. The cause of action, Lord Atkin had continued, was created by breach of the ordinary duty to take reasonable care to avoid inflicting personal injuries followed by damage, even though the type of damage might be unexpected—viz., shock. The question was extent of duty and not remoteness of damage. Lord Atkin's views had been criticised in Scotland in Currie *v.* Wardrop, a case in which a fiancée had suffered no direct physical injury but severe shock from fear for her fiancé who had been run down while walking with her. She had obtained damages, but most of the judges had seemed to think that Lord Atkin had gone too far in suggesting that a mere bystander might obtain damages. The interesting speculation arose: could an idiot child sue, through its next friend, for shock to its mother while pregnant?

Great progress, Mr. Earengey concluded, had therefore been made since 1860, but the end had not been reached. There was still the distinction between "mental" and "nervous" shock, a distinction for which there seemed to be no justification. Was it possible to say, nowadays, that no physical traces of purely mental suffering could be found? If the plaintiff could really satisfy a jury of the existence of mental suffering, there seemed no reason in principle why he should not succeed, but success would be more assured if medical science could furnish some physical evidence. In this field, as in many others, the medical profession could assist both the law and those who sought their rights by its means.

DISCUSSION

Sir BERNARD SPILSBURY said that a doctor would not use the greatly abused term "shock" for many of the cases Mr. Earengey had described. Little progress had been made in the connexion of nervous shock with symptoms arising out of it.

Dr. MORGAN FINUCANE spoke of shock in criminal cases—for example, shock producing miscarriage. Only in the last few years had any significance been given to the relation between shock and physical injuries. The patient must be laid up, and manifest some consequences of the shock. It would be interesting to hear how far medical science had been the cause of the change in the attitude in the law on this problem, and how far the law had lagged behind. Judges had to consider what was measurable; could they to-day measure mental injury?

Mr. FISHER spoke of cases which had to be reported to the Mines Department, and quoted three cases of incapacity or death due to "shock."

Dr. LETITIA FAIRFIELD pointed out that shock to the mother shortly before birth could not affect the child's already formed brain. Considering the amount of popular superstition about maternal impressions, there was a wide field in the subject. The great difficulty was that the term "shock" had taken on in medical jargon a peculiar meaning, which would be extremely difficult to interpret in a court of law or to correlate with the legal meaning. Medicine could draw no distinction between mental and physical shock. The individual who showed the longest effects of shock and was the most anxious to demonstrate it often felt the least mental pain, and was, in fact, getting great satisfaction from the business. Extraordinary shock could be endured without any physical manifestation. Its probable and reasonable effects were most difficult to estimate.

Dr. H. NORRIS said that almost every statement of claim in running-down cases included a mention of shock.

Dr. J. S. FAIRBAIRN spoke of the difficulty of dissociating the general upset of an accident from things like insomnia which might lead on to more serious conditions. In similar circumstances one person might be unharmed and another suffer for a long time. Shock might cause abortion and premature labour, but any effects on the fœtus were quite unproven.

Dr. G. W. SMITH referred to shell-shock. Surgical

shock could be defined, he said, and similar symptoms in a lesser degree were found in mental shock. The Pensions Tribunal had held that mental shock could cause 100 per cent. disability. In no case was it possible to foretell what would happen to a particular shocked individual; the full damage might only appear years later. If the patient was disabled and unable to earn his living he had a claim, but mental shock alone could not be defended in court by a medical man.

Mr. E. R. BOLTON spoke of shock due to disgust.

Dr. H. R. OSWALD pointed out that shock could be imitated by malingerers. The problem was to prove it.

Mr. B. N. LEVINSON said that a client of his had recently suggested that a claim for damages might arise out of a breach of contract—for the anxiety experienced while waiting for a case to come on!

The PRESIDENT said that the law was in a most unsatisfactory state. He thought that many more cases of this kind would be seen in the future.

Mr. EARENGEY, in his reply, observed that medicine was in an unsatisfactory state, and the law could not act without evidence. Medicine was the handmaiden of the law in assisting people to get their true rights.

REVIEWS AND NOTICES OF BOOKS

Die Einteilung des Nervensystems nach seinen Leistungen

By L. R. Müller, Professor of Internal Medicine, Erlangen. Leipzig: G. Thieme. 1933. Pp. 74. M.6.80.

Prof. Müller's attempt to set down in a slender booklet the acquisitions of recent years on functional localisation in the nervous system (brain and cord) raises a host of interesting and debatable problems. His first general distinction is between three systems—viz., systema nervosum pro mundo, systema nervorum myostaticum, and systema nervorum vitale. These systems look less familiar when latinised than when described in simpler words; they represent afferent, efferent, and sympathetic systems. Each of these is given an anatomical locus, and an effort made to localise subdivisions according to function. Much of all this is of course fully known and accepted, but much more is still undecided if not indeed purely conjectural. Thus Prof. Müller seeks to assign different functions to the different nuclei round the floor and sides of the third ventricle, but too little is known as yet to justify his partition—which looks almost too schematic to be real. He directs attention to the five types of cell-lamination in the cerebral cortex, and has an illustration to show where they are to be found. But when he essays to correlate them with cerebral function the anatomist has the advantage, for the physiology of large areas is still altogether obscure. Objection might also be taken to the view here sketched, that the motor side of emotional expression does not extend higher in the brain than the basal ganglia; nor does there seem to be any hint that muscle tonus can be disordered from lesions above them. We are assured that the function of the corpus Luysii is concerned with the vegetative system, notably with blood-vessel and gland innervation—a statement conflicting with other opinions assigning to that body a place in the system of motor (skeletal) control.

Prof. Müller confesses that little can be done at present with the possible localisation of psychical function. Yet the few pages he devotes to this matter are highly suggestive. His presentation of the questions at issue taken as a whole is able; he summarises knowledge admirably and his work is not only carefully balanced, but provokes thought on almost every page. His last sentence will find an echo in the minds of those who are interested in these deep problems: "Ich bin mir wohl bewüsst, wie himmelweit wir noch von einem wirklichen Verständnis für die nervosen Vorgänge in unserm Nervensystem entfernt sind." A number of original diagrams graphically depict mechanisms and functions in different parts of the three systems with which he deals.

Études neurologiques

Cinquième série. By GEORGES GUILLAIN, Professeur de Clinique des Maladies du Système nerveux à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1933. Pp. 462. Fr.80.

DURING the last decade five volumes of collected neurological studies have come from the Salpêtrière, enriching the literature with a wide-ranging series of articles dealing almost entirely with so-called "organic" neurology. This latest contribution not only maintains the high standard of its predecessors, but contains several papers of outstanding interest—in particular, those on cerebral tumour. The well-tried clinico-pathological method is here followed more or less throughout; it seems to accord well with the genius of French neurology. Some of the articles are purely pathological. One dealing with a "hypothalamopeduncular" variant of disseminated sclerosis merits attention, for this special form is not too well known and is occasionally misdiagnosed. There is, however, more perhaps of the descriptive than of the analytic in some of the articles, and the correlation of symptoms and lesions sometimes breaks off at a stage when a further account of Prof. Guillain's own interpretations would have been informative. A final section is devoted to an obituary notice of the late Charles Foix, by whose early death the French school sustained a grievous loss. The book is well printed and handsomely illustrated.

The Sign of Babinski

A Study of the Evolution of Cortical Dominance in Primates. By JOHN F. FULTON, Sterling Professor of Physiology in the Yale University School of Medicine; and ALLEN D. KELLER, Professor of Physiology and Pharmacology in the School of Medicine, University of Alabama. London: Baillière, Tindall and Cox. Pp. 165. 26*s.* 6*d.*

THE first title of this work will prove not a little misleading if the person glancing at it thinks it is concerned mainly if not solely with Babinski's sign. From this narrow viewpoint the clinician will not find all that information which he may be seeking. The monograph in reality embodies a series of studies on the motor system, and in particular on the motor reflexes of monkey, baboon, gibbon, and chimpanzee, forming a valuable contribution to comparative physiology. There is much discussion of the "spinal" animal, with investigation of the effects of shock on the cord, and of the reflexes to be elicited from the cord. Of interest to the clinician, further, are the endeavours made by the authors to study other reflexes than that of Babinski—e.g., those associated with the names of Rossolimo, Oppenheim, Gordon, Chaddock, Mendel-Bechterev, and others—in the ape.

One of the authors' conclusions is that in experimental neurology it is not safe to generalise from the lower animals to man, and that levels of function are greatly modified as the scale rises through the primates. The "clinical implications" of the authors, under which heading they give a short account of diplegia and Little's disease, are open to criticism.

Précis de pathologie médicale

Troisième édition revue. Vol. V. *Maladies du sang et des organes hématopoïétiques.* By P. ÉMILE-WEIL, Médecin de l'Hôpital Tenon; and MARCEL BLOCH, chef de laboratoire à la Faculté de Médecine de Paris. *Maladies des reins.* By PASTEUR VALLERY-RADOT, Professeur agrégé à la Faculté de Médecine de Paris, Médecin des Hôpitaux de Paris. Paris: Masson et Cie. 1932. Pp. 779. Fr.70.

THE section allocated to diseases of the blood and hæmopoietic organs in the latest edition of Précis de pathologie médicale contains a remarkable amount of information in a relatively small space. The anatomy and physiology of the "erythron" are first discussed and all essential methods for routine examination of the peripheral blood are described. It is the authors' aim to show that all disease reacts in some way upon the blood and hæmopoietic organs. The clinical syndromes more particularly due to disease of the erythron can be classified, they believe, on the following basis: (1) alterations in normal production and destruction of the red cells; (2) alteration in destruction and production of the white cells; (3) hyperplasia of the hæmopoietic organs; (4) neoplasms of the hæmopoietic organs; (5) infections of the hæmopoietic organs; (6) alterations in the blood plasma. Diseases are discussed in detail under these headings. It is curious to find that hæmatology in France remains untouched by recent work in America, England, and Germany. Only brief and indirect mention is made of the work of the Boston school on the part played by gastric function in the ætiology of pernicious and microcytic anæmias. Hypochromic microcytic anæmia, apart from the almost extinct form of chlorosis in young girls, is not mentioned, and the suggestive experimental work on the part played by virus infection in the pathology of glandular fever is ignored. In the section on diseases of the kidney in the same volume Prof. Pasteur Vallery-Radot, as he says in his introduction, has endeavoured to introduce the result of modern physico-chemical studies without losing sight of the clinical aspect of the problems involved. That he has partly succeeded in this difficult task does him credit. The book contains good illustrations of normal and abnormal blood pictures, of apparatus, and both macroscopic and microscopic preparations.

Diseases of the Eye

By HOFRAT ERNST FUCHS, formerly Professor of Ophthalmology in the University of Vienna. Fifteenth German edition as revised by MAXIMILIAN SALZMANN, Professor of Ophthalmology, University of Graz, Austria. Authorised translation by E. V. L. BROWN, M.D., Professor of Ophthalmology, University of Chicago. Tenth English edition. London: J. B. Lippincott Co. 1933. Pp. 641. 42*s*.

THE genealogy of Fuchs's great "Text-book of Ophthalmology" needs to be understood. The German treatise was first published in 1889 and has gone through successive editions until the present time, the thirteenth and succeeding editions being thoroughly revised by Prof. Salzmann. Meantime the work had been translated into English by Prof. Alexander Duane, of New York, and in 1917 the fifth English edition was published. This was a new translation and contained a number of radical alterations and additions inserted with the approval and partial collaboration of Prof. Fuchs himself. In the seventh edition (1919) the chapter on motor anomalies of the eye was entirely the work of Dr. Duane. Prof. Fuchs died in 1930, and Dr. Duane, having predeceased him, he had entrusted the preparation of the next English edition of his work as revised by Prof. Salzmann to Dr. E. V. L. Brown, expressing satisfaction that the chapters on refraction and muscle anomalies by Dr. Duane were to be retained. In order, however, to produce a work adapted to the needs of undergraduates rather than of post-graduates, Dr. Brown has produced as the tenth English edition of Fuchs, a translation not of the whole work but of considerably less than one half of it. He has retained the chapters on diseases of the eye, but has omitted nearly the whole of the sections on anatomy, physiology, and operative surgery, and also those on refraction and motor anomalies, written mainly by Dr. Duane. The result is a book of about the same bulk and the same price as recent English editions of the whole work, but one that covers only about one half the ground of the former and cannot therefore pretend to supersede it.

The subject matter is largely rearranged and partially rewritten. We do not find, however, many references to recent advances in treatment. Detached retina, for instance, is still referred to as an almost hopeless condition, and the developments which began with Prof. Gonin, of Lausanne, are wholly ignored. On the other hand, there are in places, no doubt, improvements on the older text. For instance, the tissue which lies between the angle of the anterior chamber and Schlemm's canal is termed in most books "pectinate" or sometimes "cribriform ligament," but why "ligament"? The term "scleral trabeculum" used in this book is more descriptive and more correct. The book is well printed and is enriched by the inclusion of 40 coloured drawings of the fundus, with descriptions taken from Prof. Salzmann's fifteenth German edition.

Marie Stopes: Her Work and Play

By AYLMER MAUDE. London: Peter Davies. 1933. Pp. 299. 8*s*. 6*d*.

THIS book is stated on the title page to be authorised, which means presumably that the subject of the biography approves its contents. The publication of certain of the more intimate parts of the book would not have been welcomed by some, but the public character, at any rate to-day, must accept the drawbacks as well as the pleasures of the position. Mr. Aylmer Maude, in his eulogy, provides evidence that Dr. Marie Stopes's academic career forms a good illustration of rapid success in provinces of learning which had previously been occupied by men, if occupied at all. The chapters describing her work as a propagandist, and the legal conflicts arising out of that work contain matters of medical interest familiar to most of our readers, who will not perhaps be similarly interested in the details of her private life. Or they may already be acquainted with many of these, for the present publication is an enlargement of a biography written by Mr. Aylmer Maude some nine years ago, the expansion of the birth-control movement during the interval being the justification of the re-issue.

THE LANCET

LONDON: SATURDAY, JUNE 3, 1933

SLUM CLEARANCE IN OUR TIME

THE reply of the Ministry of Health to the Birmingham housing committee makes it certain, if confirmation were needed, that the Ministry is serious in its plan to clear away slums within five years. In effect the reply was this: Until you have removed or reconditioned your existing slums, no building of houses by the municipality can be sanctioned. The decision to carry out such a plan opens up a new epoch in the public health and one which vitally affects the medical profession. The tacit acceptance of the slum has poisoned medicine on both its curative and preventive aspects. Slum conditions of life so far overshadow any influence the general practitioner can bring to bear that practice becomes a farce. In how many of the poorer parts of London live doctors who are able to make their clinical work effective in the environment? This is not so much because they cannot stick the conditions for themselves as that they do not find there the conditions for doing good work. The life of many a medical officer of health equally has been frustrated by inability for 20 years past readily to secure closure of dwellings that are unfit to live in. It is part of his statutory duty to report to the local authority when the conditions are unfit for decent living; but what is the good of reporting when nothing can be done because there is nowhere for the occupant to go? And so he is prevented from doing what should be his most vital work; and like everyone else in this miserable chain of circumstance he becomes hardened at last in his acceptance of what is really intolerable.

But how, it will be asked, is this millennium to be reached; for it will involve both change of house and change of heart. What is there in our experience to justify confidence in either? The answer to the first of these doubts is that, in the opinion of the Ministry of Health, the clearance of the slums is a strictly limited problem measurable both as to the cost and the time required for its solution; both cost and time have been worked out quietly at the Ministry, and on this basis the five-year plan has been drawn up. Conditions are exceptionally favourable. With the present low building costs and cheap money, along with the liberal subsidy payable under the Housing Act of 1930, it is regarded as possible to build houses to replace the existing slums which can be let at rents well within the capacity of the poorest of the working-classes; and the Ministry of Health is prepared to sanction loans in respect of a reasonable proportion of the rehousing likely to be required. Circular 1331 of April 6th in fact spoke hopefully even of shortening the aggregate time taken over the whole process of dealing with bad housing areas. To what extent will rehousing alter the habits of life of those who have lived in slums? There are those who say plausibly "once a slum dweller, always a slum dweller," and that the housewife who pours her slops out of the window in Hoxton would do so in Hampstead; but these are short-sighted exponents of the effect of heredity and environment on human conduct, and especially do they neglect the value of what GRAHAM WALLAS called social heritage. It must not be forgotten that in London at least a large part of the unhealthy areas have never been fit to live in, as judged by present-day standards. South of the Thames there are still masses of cottages built a hundred years ago or more, during and just after the wars with Napoleon, squeezed 150 to an acre with possibly 600 inhabitants. In street after street in Southwark are to be found people living under conditions of darkness, dampness, and overcrowding; they have never had the opportunity of knowing anything better. But there is sound evidence from industrial towns like West Bromwich that when such people are moved into habitable surroundings they improve in standard of cleanliness and behaviour beyond expectation and that perhaps not more than 10 per cent. lack the ability to raise themselves above their slum habits unassisted; and after their removal enlightened public opinion will not allow them to remain unassisted in their search for better things. Unfortunately there is another class of slum—a frequent class—in which the houses were originally good but in which the standard of living has been entirely due to the occupants. But here the character of the district has changed and houses once occupied as single-family residences have become the homes of three or four families each, with no structural alteration whatever. The landlords have failed to keep these houses in sanitary repair, turning unfurnished into furnished lettings whenever the opportunity occurred, and no one is responsible for the communal parts of the house. In fairness it would be difficult to say whether the dirty conditions are mainly due to landlords or to tenants. It is in such regions that reconditioning of the houses and recall of their owners to a sense of responsibility would avoid the necessity for rebuilding.

Finally, while it must be a disappointment to go-ahead municipalities to suspend their beneficent work of providing houses for the working-classes, there is a strong feeling, voiced not only by the Economy Committee, that the time has come when the normal provision of working-class houses should cease to be a charge on the public purse. With the lowered rate of interest rates on gilt-edged investments and the reduction in building costs, the private builder, and still more the private investor, will return to the provision of houses for letting to the working-classes. Alongside this there is a growing willingness to subscribe to public utility schemes and an increased readiness to lend capital at low interest in order to provide houses for those who cannot pay an economic rent. With the coöperation of housing authorities, public utility societies, and representatives of the building

trades there is a good hope of solving the problem of working-class houses when once the standard of the lowest level has been raised to the level of decency. This may be an unduly optimistic view; perhaps it is an expression of the illogical feeling that as something ought to be done something will be done.

AGRANULOCYTOSIS

IN our last two issues cases of agranulocytosis have been reported by Dr. ADOLPHE ABRAHAMS and by Dr. ERNEST BULMER. Each of them mentions difficulties in nomenclature, and it is clear that this has become extremely confused. The condition is one in which the blood shows leucopenia and an almost complete absence of polymorphonuclear cells, and it is still uncertain whether it should be regarded as a "disease entity," or whether, as seems more likely, the neutropenia is merely a symptom of varied causation. The relation of severe and acute cases to chronic and benign leucopenia, which is probably not uncommon, has also to be determined. JACKSON, PARKER, and TAYLOR[1] in studying a large group of cases with the common factor of neutropenia and severe illness, divided them into three types, probably of different ætiology, which offer a convenient temporary classification. First there is agranulocytic angina, in which, without apparent cause, there are severe ulcerative lesions of the mouth and other mucous membranes associated with a low total white cell count and almost complete absence of polymorphonuclear cells in the blood stream. Sometimes, at least, the fall in white cells precedes the onset of other symptoms; the attacks may be repeated; and the condition is commoner in women than men. Secondly there is a group of cases they call "malignant neutropenia," in which the fall in white cells follows a known infection such as pneumonia or osteomyelitis. Thirdly, there are the toxic leucopenias, due to known agents like benzol or arsenic. In all a diagnosis is only possible after examination of the blood.

The pathology of the bone-marrow in agranulocytosis is variable. LICHTENSTEIN,[2] on a basis of 26 cases which represented, he thought, a definite disease entity, and fell probably into the group agranulocytic angina, believes that the neutropenia depends on a failure of production of white cells in the marrow, owing to absence of myeloid elements. Such aplasia has been noted by other workers, but it is not the most common finding, for myeloid hyperplasia rather than hypoplasia appears to be characteristic of a large proportion of cases. This has led FITZHUGH and KRUMBHAAR[3] to put forward the stimulating hypothesis that the peripheral neutropenia arises from a "primary maturation arrest," due to lack of some specific factor, rather than to "primary aplasia." On this view, therefore, agranulocytosis and malignant neutropenia are the counterpart of Addisonian pernicious anæmia, rather than of aplastic anæmia. The remarkable response to nucleotide in many cases supports the theory that the neutropenia is sometimes due to a deficiency which nucleotide supplies. The association of the condition with severe sepsis in JACKSON'S second group, malignant neutropenia, might be explained as due in part to the known inhibitory action of infection upon essential factors—e.g., insulin, iron, liver—disturbing the normal mechanism of nucleotide control which is thought to regulate the white blood-cell level in the peripheral blood. Aplasia may be the end-result of all types of anæmia associated with failure of normal red cell maturation; and similar aplasia, affecting the myeloid elements after a period of over-stimulation, may account for the divergent bone-marrow findings in agranulocytosis and malignant neutropenia.

Injection of nucleotide, on both theoretical and practical grounds is, so far, the most hopeful line of treatment in all groups of cases; 74 per cent. of those recorded by JACKSON and his colleagues recovered. LICHTENSTEIN advocates irradiation of the bones, and turpentine injections with a view to forming fixation abscesses have also been advised. In the present state of knowledge the prognosis appears to be grave but not hopeless.

[1] Jackson, H., Parker, F., and Taylor, F. H. L.: Amer. Jour. Med. Sci., 1932, clxxxiv., 297.
[2] Lichtenstein, A.: Acta Med. Scand., 1932, supp. xlix.
[3] Fitzhugh, T., and Krumbhaar, E. B.: Amer. Jour. Med. Sci., 1932, cxxxiii., 104.

DAMAGES FOR SHOCK

SOMEHOW or other our English law has, in Lord ATKIN'S phrase, followed a belated psychology which falsely removed mental phenomena from the world of physical phenomena. A paper on the Legal Consequences of Shock, read by Mr. W. G. EARENGEY, K.C., before the Medico-Legal Society, and summarised in another column, shows how slow the law courts have been to admit that, where a negligent act has caused injury, damages may be recovered for invisible suffering. Naturally the judges did not care to see a wide field opened to imaginary claims. Legal tradition was something of an obstacle. In its historical origin the plaintiff's action for damages against the motorist who runs him down is rooted in the old action of trespass to the person. Physical impact seemed essential; it was not easy for courts to award damages for that kind of physical injury which is inflicted through the medium of the mind. English procedure requires strict proof of facts. Jurymen can easily appreciate evidence of a broken limb, but not of other lesions which they cannot be shown. If shock is caused by fear, how can fear be proved? Fear, one of our foremost legal writers has said, falls short of being actual damage, not because it is a remote or unlikely consequence, but because it can be proved and measured only by physical results. Whatever the origin of the legal doctrine, it seems clear that until the twentieth century damages could be recovered for "bodily" or "physical" but not for "mental" injury. This view, said Lord ATKIN in 1925, is now definitely wrong.

The true question for the courts seems to-day to be this—what consequences ought reasonably to be contemplated as flowing from a man's negligent act? Somebody carelessly leaves a motor-lorry

at the top of a steep hill so that it runs away uncontrolled. Ought not a reasonable man to foresee that children may be playing in the street below, that the children will have anxious mothers, and that an anxious mother's fear for her child may cause her to suffer shock without any physical impact from the lorry? Some mothers of course will be more anxious than others; some plaintiffs will suffer more severely than others from shock. In Dulieu *v.* White and Sons it was unfortunate for the defendants that the woman whom their servant's negligent act frightened should have been pregnant. No doubt, said Mr. Justice KENNEDY, the driver of the defendant's van could not anticipate that she was in that condition; but what did that matter? If a man is negligently run over, it is no answer to his claim for damages to say that he would have suffered less injury, or no injury at all, if he had not had an unusually thin skull or an unusually weak heart. It is apparently reasonable to suppose that the injured person may be suffering from some weakness; the average man in the street is not necessarily the average man; the motorist must not assume that every wayfarer has average sight, hearing, and alacrity.

The law courts, now undoubtedly more ready to take note of the consequences of shock, can act only upon the evidence submitted to them. The evidence will mainly be given by medical witnesses; if they can show clearly that "nervous" or "mental" injury (the judge in Dulieu's case regarded the two epithets as interchangeable) follow in continuous and uninterrupted sequence from the breach of duty, the courts will manage to award damages for these consequences. Acutely minded judges like Lord ATKIN are ready to make old legal rules fit new conditions and keep pace with modern science. The obsolete legal division between physical and mental phenomena is being broken down. Further progress seems to depend on the medical witnesses. Vague use of Mesopotamian phrases such as "traumatic neurasthenia" is not enough. Medical research and exposition must build up the general knowledge so that judges and juries can understand the connexion of symptoms and can feel confident that the risk of malingering is minimised.

ANNOTATIONS

PROTEIN SHOCK FOR UNDULANT FEVER

THE existence of undulant fever due to *Brucella abortus* of the bovine type presents a problem, not only to the agriculturist whose cows are primarily responsible for the disease in man, but also to the clinician who is called upon to treat one of the most intractable types of fever known to human medicine. In this country analysis of the recorded cases has shown that the average duration of the pyrexia is 11 weeks, while in some cases the disease has lasted for several months. So far no method of treatment has proved of much avail. The disease is self-limited and the process by which cure eventually results is similar in many respects to the infection immunity of tuberculosis, the development of which has hitherto proved resistant to the usual bacteriological methods of stimulation. In an infection accompanied by a more or less continuous bacteræmia a favourable response to vaccine treatment is scarcely to be expected, and the recorded results confirm this expectation. The introduction into the blood stream of compounds of heavy metals has likewise proved fruitless. Successful results have been reported abroad with a preparation known as "formabortin," prepared by formol detoxication of the filtrate of an old *abortus* culture, but as yet this preparation has not been tried in Great Britain. The failure of all known remedies to influence the course of the disease renders especially striking the results recorded in our current issue by Dr. Philip Manson-Bahr and by Dr. Sinclair Miller on the effect of protein shock therapy. At a joint meeting of the sections of epidemiology and of medicine of the Royal Society of Medicine in January last, Dr. Miller gave a short description of his success in the treatment of undulant fever patients by the intravenous injection of T.A.B. vaccine. The temperature charts accompanying his paper undoubtedly showed that after the production of shock the temperature fell and remained normal. Since, however, in some of the charts the temperature appeared to be falling at the time of the injection, it was difficult to escape from the suggestion that the effect of the shock treatment was merely to hasten the occurrence of a process that was already occurring spontaneously. A similar suggestion is inevitable in considering the chart furnished by Dr. Manson-Bahr. In his patient the temperature had persisted for over four weeks, while during the few days preceding treatment it had fallen progressively, till at the time of injection it had actually reached normal. That a single dose of vaccine is not always successful is illustrated by some of Dr. Miller's cases, which required two, three, or even five injections. How much weight can be attached to treatment by these repeated doses it is extremely difficult to say. It is certain that one or even two marked protein reactions may have little or no apparent effect on the ultimate course of the pyrexia. Being almost entirely ignorant, as we are, of the mechanism of action of shock therapy, it is not surprising that its use is accompanied by some failures. At present we do not know whether the apparently successful results are fortuitous or are due to a genuine increase in the patient's resistance. In such a distressing disease as undulant fever it is justifiable to try all methods, however empirical, provided they do not involve too great a risk to the patient, and it is therefore to be hoped that others will give the protein shock therapy a fair trial, being careful to report their failures as well as their successes.

QUEEN'S NURSES

THE question whether acute illness can properly be treated at the patient's home without the facilities provided in hospital cannot be answered without reference to the type of illness and the economic status of the patient. Obscure febrile conditions which require pathological aids to diagnosis, fractures of which the position after reduction must be confirmed by X rays, and severe pain of undetermined source are best treated in hospital or nursing-home, whatever medical or nursing facilities the patient is able to command. But perhaps the tendency to move patients from their own homes, where in general they would prefer to remain, for conditions, however

acute, which have already been diagnosed and require mainly good nursing for their recovery, has been carried too far. The statistics compiled by the Queen's Institute of District Nursing on the nursing of various notifiable diseases and submitted at the annual meeting of the Queen's nurses held on June 1st at 18, Carlton House-terrace, London, W., showed how great is the scope for skilled home nursing among the poor and middle classes, and how good are the results obtained. In 1932, for example, more than 13,000 notifiable cases of pneumonia were nursed by Queen's nurses, two-thirds of the patients living in London or other towns and the rest in rural and scattered areas; 68 per cent. of these patients became convalescent under the care of the Queen's nurses, the rest being sent to hospital or dying at their homes. The comparative results for different types of district are of some interest: in London 66·4 per cent. became convalescent, 16·1 per cent. were sent to hospital, and 11·6 per cent. died; in the urban areas 65·5 per cent. became convalescent, 11 per cent. were sent to hospital, and 16·9 per cent. died. In the rural areas 69·3 per cent. became convalescent, 7·1 per cent. were sent to hospital, and 13·9 per cent. died. The mortality in rural districts, which on theoretical grounds would seem to provide better conditions for the treatment of pneumonia than towns, was thus higher than in London, though lower than in other urban areas, but this may be partly accounted for by the fact that in scattered areas nurses cannot make so many visits in a day. Moreover, the nurse is less often able to meet or even talk with the doctor and get his instructions direct. We are informed that in towns Queen's nurses sometimes pay as many as three or four visits a day when a patient is acutely ill; each visit may last from three-quarters of an hour to one and a half hours, according to the amount of treatment required, and the nurse is often able to suggest someone who can stay with the patient between her visits if the family require additional help. In the course of her training she has been taught to what agencies she can apply in order to obtain such requirements as the patient is too poor to afford. The home nursing of cases of measles has been found to be very successful provided—and this applies to other cases also—that the nurse is requisitioned at an early stage. The maternal mortality in the 67,500 midwifery cases undertaken by Queen's nurses and associated village nurses is only 2·1 per 1000. The preventive work done by a district nurse is not always recognised, and her visits have an educative value in teaching friends and relatives how to perform simple nursing duties. There are now 1949 Queen's nurses and 2814 village nurses working in connexion with the institute.

THE NEW NARCOTIC DRUGS CONVENTION

IT is satisfactory to learn that the required number of ratifications and adhesions to the Limitation of Dangerous Drugs Convention of 1931 was received at Geneva three days before the date (April 13th of this year) which would permit that Convention to come into force on July 13th. By April 20th further ratifications had been received, and the following countries are now parties to this third convention, having for its objects the restriction of dangerous narcotics to legitimate purposes: Belgium, Brazil, Canada, Chili, Costa Rica, Cuba, Czechoslovakia, the free city of Danzig, Dominica, Egypt, France, Germany, Great Britain, Hungary, India, Ireland, Italy, Lithuania, Mexico, Monaco, Nicaragua, Persia, Peru, Poland, Portugal, Rumania, Salvador, Sudan, Spain, Sweden, Switzerland, Turkey, United States, and Uruguay. Guatemala and Hayti are about to follow suit, making 37 in all pledged to carry out this new convention which provides the League of Nations with a new and more effective weapon against the abuse of narcotics. It will, in fact, enable the manufacture of drugs to be limited to the quantities required for the medical and scientific needs of the world. Officially it is claimed that the convention constitutes "an entirely new departure in international coöperation, since, for the first time, manufacture is subordinated in the economic field to superior humanitarian and moral considerations." Much of course will depend upon the legislative and administrative measures adopted in so many different countries in order to effectuate the limitation convention. Past experience has demonstrated how variously solemn international obligations have been interpreted in the matter of commerce in opium, morphine, heroin, and cocaine. This is not a time for cutting down the budget of the League of Nations in its supervisory duties over licit and illicit traffic in narcotics. There is one more weak spot in any effective control over this lucrative commerce in dangerous drugs, and that is the limitation of production of the raw materials from which they are made, the opium poppy and the coca shrub. The advisory committee on opium at Geneva is, it is understood, still engaged on making adequate preparation for a conference on raw materials.

COMENIUS

TOWARDS the beginning of the sixteenth century the centres of learning, continental as well as British, were only prepared to recognise as developments in mathematics, physics, or biology those things which could be based upon the teaching of Aristotle. And while this was extremely hampering to most movements towards scientific truth, the attitude of the Catholic Church had a similar repressive tendency. The inaccurate Greek pundit and the reactionary Italian priest stood in the way of all advance. The general public bowed to their edicts, while those who by intellectual capacity could have offered resistance to bigotry had their attention directed to, and their wits absorbed by, matters of State. A celebrated detective has admitted that he finds the truths of astronomy to have no practical applications in his work, and the politician of the Middle Ages adopted the same attitude. But here and there movements of enlightened men counteracted the classical and ecclesiastical tyranny, and societies came to be founded for the purpose of bringing together men of science and interested amateurs, in such a way that comparisons could be made between the methods employed and the results obtained in different researches, as submitted for discussion. Our own Royal Society, founded in 1662 and from the beginning possessing a certain international character, was the British expression of the need to promote wisdom among the peoples, and Mr. Fitzgibbon Young, in an interesting account of Comenius, sets out the European position at the middle of the seventeenth century with regard to scientific learning.

Jan Amos Komensky, Comenius being a Latinised form which it was customary at the time for authors to adopt, was a Czech philosopher with original and highly advanced views on education. He visited London in 1641, and his visit marked the development in this country of the idea of a great institution for scientific research which later took shape in the foundation of the Royal Society.[1] The book starts

[1] Comenius in England. By R. F. Young, M.A. Oxf., F.R.Hist.S. London: Oxford University Press. 1932. Pp. 99.

with two tabular statements, the first illustrating the life of Comenius in connexion particularly with the development of scientific societies, and the second setting out the growth of these bodies and of that evolution of encyclopædic ideas which marked the eighteenth century. These ideas had behind them a scheme for the organisation of society, and, to Comenius in particular, the spread of civilisation among the native tribes appealed forcibly. Mr. Young puts before us a series of contemporary documents which tell a remarkable story. In the first Komensky describes his "pansophic plan," a scheme for an international or central college for scientific research; in another he describes his visit to England; and from others we learn the effect that his writings and learning had upon the minds of contemporary leaders of thought. These documents have been selected and translated by Mr. Young and picture the rise of the scientific spirit in learning while illustrating Comenius as a man of noble imagination. The last document is a translation from a latin version of a passage from Comenius's work the "Great Didactic," and describes the function of a universal college. This in his idea was to be "a school of schools and . . . would bear the same relation to other schools that the belly bears to the other members of the body, that of a living laboratory supplying sap, vitality, and strength to all." An appendix deals with Comenius's plans for the higher education of the Indian in Virginia and New England, and shows how many humane thinkers of the sixteenth and seventeenth centuries saw, in the native American populations, virgin material to be shaped into ideal citizens. What happened is a terrible commentary upon these humane imaginings. Indeed, in many ways this small book, which is a model of painstaking and learned research, makes sad reading, for the international spirit with which Comenius and his friends were imbued seems to have effected little for the world of to-day.

TONSILLECTOMY AFTER QUINSY

IT is pretty generally agreed that such an operation as tonsillectomy should not be performed in the presence of signs of acute inflammation. Most authorities hold that under such circumstances the danger of hæmorrhage is increased, and at a discussion initiated last year by J. M. le Mée [1] at the American Hospital in Paris, the view was generally taken that an important factor in the avoidance of pulmonary abscess was to postpone tonsillectomy until any acute inflammation had subsided for at least three weeks. Nevertheless, the treatment of peritonsillar abscess by immediate tonsillectomy "à chaud" has lately been advocated in France by Léroux and Halphen. In criticising these proposals, Prof. Georges Canuyt [2] states that he has performed a large number of tonsillectomies "à chaud," but that he has never extolled the method for the treatment of quinsies. In his opinion, it is defensible if the preliminary incision of the abscess has liberated the tonsil in great part from its attachments, if the local anæsthesia has been successful, and if the general signs of infection are not very pronounced; but these conditions are seldom realised, and he performs this operation "à chaud" less and less often. On the other hand, after the quinsy has subsided, tonsillectomy "à froid" is made much more difficult by adhesions between the capsule and the surrounding structures; besides, many patients fail to return for tonsillectomy after the quinsy has been cured. Canuyt therefore recommends a compromise, and removes the offending tonsil "à tiède," in the tepid stage. He first incises the palate at the upper pole of the tonsil, separating the palatoglossus from the palatopharyngeus, and thus allowing the anterior pillar to retract outwards; the abscess is then opened through a long vertical incision at the edge of the anterior pillar. The dissection of the tonsil is completed a few days later when the œdema has disappeared, the infiltrated tissues have recovered their mobility, the tonsillar bed is widely exposed, the greater part of the tonsil is detached, and the temperature has almost returned to normal. He claims that at this stage regional and local anæsthesia are very good, that the operation is easy with a minimum of dissection because separation has been effected by the abscess, and that the patient recovers with surprising rapidity and without rise of temperature, hæmorrhage, or pain. It seems that this method may have advantages; on the other hand, it is doubtful if they outweigh the drawbacks mentioned above, and in any case the time for the tonsillectomy must be carefully chosen. Perhaps, too, the dissection under infiltration anæsthesia, recommended for opening the quinsy, may not always be possible in a patient acutely ill and in great pain, who may be unable to open the mouth for more than a fraction of an inch.

[1] Rev. de Laryngol., Suppl., July–August, 1932.
[2] Presse Méd., May 13th, p. 769.

HEALTH IN WEST AFRICA

THE four West African territories which come under the administration of the Colonial Office are, from north to south, the Gambia, Sierra Leone, the Gold Coast, and Nigeria, in increasing order of size and population. In these territories there are a large number of non-native officials about whose health conditions the Crown Agents issue annual returns.[1] The figures for the year 1932 represent the best results yet achieved. Whereas in the year 1903 there were only 1259 non-native officials engaged in West Africa, the number had increased to 3630 in 1932. A study of the death- and invaliding-rates during this period of 30 years reveals that while the number of officials in the West African services had steadily increased, these rates have shown a progressive diminution. Thus from 1903 to 1912 the highest death-rate per 1000 in a year was 28·1, the lowest was 12·4; from 1913 to 1922 the highest was 16·5 and the lowest 8; from 1923 to 1932 the highest was 12·8 and the lowest 3·6. The skeleton Table appended shows the trend. While in England

Year.	Average number in Service.	Deaths.	
		Total.	Rate per 1000.
1903	1259	26	20·6
1912	2409	30	12·4
1922	3220	26	8·0
1932	3630	13	3·6

a death-rate of 3·6 per 1000 would be remarkable enough, in a country with the evil reputation which West Africa has long had it appears little short of miraculous—it need only be recalled that in the period 1881–97 the death-rate per 1000 in the Gold Coast was 75·8, in Lagos 53·6. These non-native officials of course form a selected class; they are selected as regards sex, age and, to some extent, physical and intellectual capacity. In so far as sex is concerned, however, it is notable that of the few

[1] From the Crown Agents to the Colonies, 4, Millbank, London, S.W.1. 6d.

women (148) present in the service on Jan. 1st, 1932, none died and only one was invalided during the year. In order to establish a fairly just comparison for the figures as a whole, we should have to take a home population of males from 20 to 60 years of age and selected largely from physically fit public school and university men; even so, an annual death-rate of 3·6 per 1000 would not easily be bettered. Analysis of the causes of the 13 deaths occurring in 1932 provides one feature of special interest. In West Africa we might justly anticipate that the grave diseases peculiar to the tropics would be productive of a majority of the deaths; the more unexpectedly therefore does it emerge from the tables that only two cases died of tropical diseases, one death being due to malaria and the other to blackwater fever; the remaining 11 deaths were caused by such cosmopolitan conditions as pneumonia, syncope, Hodgkin's disease, carcinoma, sarcoma, and myocarditis. The invaliding-rates for the past 30 years show a concomitant progressive fall, that for 1903 being 65·1 per 1000, for 1912 28·2, for 1922 20·8, and for 1932 8·5. Here again attention is arrested by the diseases causing invaliding; of the 31 officials invalided in 1932 only two were sufferers from tropical disease. Ten of the remainder are classified under different diseases of the nervous system, the diagnosis psychasthenia being applied to no less than five of these. The preponderance of nervous conditions in the invaliding figures merits investigation and some of the possible causes have lately been discussed.[2]

REMEDIES FOR ANÆMIA

In reviewing the treatment of the anæmias Prof. P. Morawitz, of Leipzig, writes [3] of the changes that have taken place in the last 30 years, and also of gaps that remain to be filled. Until lately, as he says, iron and arsenic were practically the only weapons against all forms of anæmia. The former, acting almost as a specific in chlorosis, fell for a time into disrepute as this disease grew rare. But now we have realised that many of the failures of iron therapy were due to under-dosage or to the use of unsatisfactory preparations. During the last ten years it has been shown that doses five to ten times higher than those previously given may be necessary for satisfactory blood regeneration, and that the bivalent iron preparations such as ferrum redactum are more active than any organic iron compounds at present known. This development of iron therapy, especially in microcytic or achlorhydric anæmia, was brought forward by Faber in 1913; but it is only recently that its importance has been fully appreciated. The second remedy, arsenic, has now few supporters in any form of anæmia. Formerly it was thought to improve the condition of patients with pernicious anæmia, but its use is now mainly limited to the anæmias of leukæmia and Hodgkin's disease, and even here its value is doubtful. Some workers, as Morawitz notes, still continue its use in combination with liver for the treatment of pernicious anæmia, but the benefit is somewhat uncertain. In this field liver has proved itself so far specific that Morawitz agrees with Minot in saying that an anæmia which does not react to liver is not pernicious anæmia at all. With liver as with iron, however, increasing experience has shown that massive dosage may sometimes be necessary and there is no fixed quantity that can be regarded as sufficient for any patient. The optimal dose may even have to be much above the original ½ lb. a day suggested by Minot. But since the introduction of liver and stomach extracts, which may be given intravenously as well as by mouth, the equivalent of twice or even three times this amount may be administered, and will lead to improvement in a number of so-called liver-refractory cases. Nevertheless, there are other cases, as was pointed out by R. T. Beebe and G. E. Lewis [4] early in 1931, that require not only liver but also large doses of iron before an adequate blood response can be obtained. These workers described eight cases of pernicious anæmia in which the blood did not reach normal figures until grs. 60 to 90 of iron and ammonium citrate were given daily in addition to a full liver diet; they also noted among 108 cases five in which the blood did not return completely to normal even when liver and iron were used. Beebe and Lewis emphasised the important point, which Morawitz also brings out, that varying quantities of liver may be necessary in different patients to maintain a normal blood picture. That this is essential in treatment is clear from the incidence of nervous symptoms. They showed that these appeared or grew worse only when the red blood count fell, and that treatment with iron as well as liver might be necessary to maintain this level. In none of 108 cases in which a normal level was maintained did neurological changes develop. It is to be hoped that a combination of iron and liver, in cases which do not respond well to liver alone, may prevent the onset of cord degeneration, and thus fill a gap in treatment that Morawitz sadly displays.

JEJUNOSTOMY FOR GASTRIC ULCER

In our last issue Mr. Harold Hartley wrote in praise of jejunostomy as the method of choice in every case of gastric ulcer when medical treatment has failed, and expressed surprise at the ignorance, even in high places, of what this operation can achieve. Recently [5] Mr. Stanley Hillman made a more qualified plea for the operation, restricting its use to massive non-resectable ulcers, and following it up later with a partial gastrectomy. The assumption of ignorance amongst prominent gastric surgeons on the uses of jejunostomy does not seem to be warranted; perusal of the literature of the last ten years reveals articles on it by Eiselsberg, Moynihan, Patel, Leriche, Tavernier, and others. It was at one time warmly advocated by some German surgeons, but failed to establish its position as a routine method; it is significant that the most experienced gastric surgeons regard it as an exceptional method to be employed only on rare occasions when resection is technically impossible owing to extensive and widespread fibrosis and adhesions. While it is no doubt difficult to assess the value of an operation so seldom performed, the general objection to it seems to be the uncertainty of the results, the tendency to recurrence of symptoms when the fistula is allowed to close, and the necessity for long delay before such closure takes place—to say nothing of the inconvenience of a jejunal fistula. It cannot be accepted that jejunal feeding gives absolute rest to the stomach, for Lim and others have shown how the introduction of food into the jejunum calls forth a flow of gastric juice the acid of which is not neutralised by combination with proteins of the food. Nevertheless, it must be admitted that such secretion is decidedly less than it would be if food were introduced into the stomach. Another fact familiar to all gastric surgeons of much experience,

[2] THE LANCET, [Feb. 11th, pp. 302 and 320; Feb. 18th, p. 397.
[3] Deut. med. Woch., April 14th, p. 560.
[4] Amer. Jour. Med. Sci., 1931, clxxxi., 769.
[5] Brit. Med. Jour., Feb. 11th, p. 221.

which leads to caution in appraising the results of jejunostomy, is the extraordinary amelioration of symptoms which sometimes follows a simple laparotomy where, because of unfavourable conditions, a large callous ulcer has been left without any resection or short-circuiting operation being performed. It is only fair to add that a surgeon of the eminence of H. J. Lamćris nine years ago declared [6] that he had been so impressed with the good results of jejunostomy that he had abandoned resection operations. He may or may not be still of the same opinion. It may also be asked whether a duodenal tube would not do all that a jejunostomy can accomplish. From all of which it seems clear that jejunostomy may be desirable in cases of callous ulcer where a resection is impossible of achievement, and where the stomach is so distorted as to render the passage of a duodenal tube problematical, or where intestinal feeding is envisaged for too long a period for a duodenal tube to be satisfactory.

ŒSOPHAGEAL CANCER

Prof. Grey Turner not long ago spoke of carcinoma of the œsophagus as "the most unsatisfactory subject in the whole realm of surgery." This note of despondency is emphasised in two communications coming from sources widely separated geographically.[7] The condition is unfortunately not uncommon. The Registrar-General's figures, quoted by Dr. James Maxwell and Mr. J. C. Hogg in our issue of May 20th (p. 1065), show that in England and Wales in 1930 it accounted for 3·9 per cent. of deaths from cancer. Halloran states that in the State of New South Wales in the same year it ranked third among varieties of cancer in males. The growth may be situated in the upper, middle, or lower thirds of the œsophagus, but the last site is the commonest. This, it is suggested, may be due to increased irritation from food or drink resulting from slowing of passage at the diaphragmatic constriction, aided by chronic spasm which may occur at this point. Among ætiological factors Watson lays special stress on repeated trauma caused by swallowing insufficiently masticated food or excessively hot fluids. A history of habitual tea-drinking to excess is, he says, commonly obtained from Russian patients, and in his series (comprising cases admitted to the Memorial Hospital, New York, over a period of 13 years) Russians outnumbered any other nationality, and formed 46 per cent. of all non-American patients. He regards bad teeth as of great significance: "we do not see carcinoma of the œsophagus in patients with sound, healthy, clean teeth." Alcohol, tobacco, and spiced foods are other possible causal factors.

Carcinoma of the œsophagus is a rapid disease, and in Watson's series the average duration of life from the onset of symptoms was only 10½ months. The initial symptoms are so vague and seemingly unimportant that the disease is almost always far advanced before the patient seeks advice. As it is only in the earliest cases that anything is to be hoped from radical treatment, the question of early diagnosis may be of critical importance. Œsophagoscopy is essential in all suspected cases, and X ray examination is valuable in showing the extent and site of the growth and the presence of complications such as fistulæ. The value of diagnosis, however, is reduced by the fact that the results of all forms of treatment have so far been profoundly disappointing. A number of cases of successful resection of the cervical part, with or without subsequent restoration by plastic surgery, are on record,[8] but at the lower end results are more doubtful, and in the intrathoracic part scarcely any successes have been obtained. The difficulties of access and the risks (chiefly from shock and sepsis) account for an operative mortality approaching 100 per cent.—sufficient to give pause to the boldest. Hence it is natural that irradiation, both by X rays and radium, should have been extensively tried, but here again the results have not been encouraging. Many workers, including the authors of both the papers under review, have abandoned attempts at radical treatment, except in the very rarest cases, and fallen back on palliation. Watson's preference is for external radium treatment combined with gastrostomy. Halloran, on the other hand, favours intubation, but points out that after-supervision is necessary lest the tube slip out of place. It is a question whether in many cases even palliative treatment is worth while.

[6] Deut. Zeits. f. Chir., 1924, clxxxviii., 1.
[7] Halloran, G.: Med. Jour. Australia, Feb. 11th, p. 173; Watson, W. L.: Surg., Gyn., and Obst., May, 1933, p. 884.

MALARIA AND THE HOUSE

THE food preferences of the mosquito play a large part in the distribution of malaria. I. J. Kligler and G. Mer [9] are undertaking a series of studies on malaria in an uncontrolled hyperendemic area, lying on the shores of Lake Huleh in Palestine; one of these deals with the behaviour of *Anopheles elutus*, the main local vector of malaria in relation to housing. This report accepts the arrangement used by Clayton Lane in the critical summary of the literature which he prepared for the League of Nations.[10] After pointing out the discussion which is centring round the theories of zoophilism or of a homing (or hospice-return) instinct, they conclude that food tropism is the primary regulator of anopheline wanderings. Locally, *A. elutus* is present as imago throughout the year, but breeds from March to November, and with intensity from April to June, while catches in huts and stables are greatest in May and June. But so far as the hut is concerned as anopheline feeding and resting place, two complicating factors appear in the beginning of May with the increasing heat. Animals and man no longer sleep indoors, so that this night-feeder is not drawn into the houses for food; and cooking too is done out-of-doors, so that the mosquitoes are free to rest inside, undisturbed by the smoke from open fires. The writers' catches have shown the potent action of both these factors here, as elsewhere. *A. elutus* feeds most actively just after sunset and just before sunrise, and though a house-haunter will feed in the open as far as 60 yards from tents, while it accumulates in huts, tents, and stables, if the structure of these and the habits of those who dwell in them are to its liking. In summer there is active transference of mosquitoes from hut to hut, in winter oviposition ceases but feeding continues; there is that gonotropic dissociation which Swellengrebel established for Holland, a condition conducive to transference of malarial infection within the house. Regarding food preferences as shields for man against infection, these writers were guarded, holding the matter more complicated than is generally realised, a conclusion elucidated by the next paper of their series,[11] the facts in which suggest that the food preferences of *A. elutus* vary with season.

This question of food preferences recalls the report by L. W. Hackett and A. Missiroli [12] on D. Fallaroni's two races of *A. maculipennis*, the common European anopheline. The dapple-winged race, they hold, bites

[8] For example, Mr. Arthur Evans's case in Brit. Jour. Surg., January, 1933; see THE LANCET, Feb. 11th, p. 343.
[9] Rivista di Malariologia, 1932, xi., 553.
[10] See THE LANCET, 1931, ii., 306.
[11] Trans. Roy. Soc. Trop. Med. and Hyg., 1932, xxvi., 283.
[12] Ibid., p. 65.

both man and animals. The barred-winged race bites only animals, and it is where this race has become predominant that malaria has disappeared from Europe. They are satisfied that where this mosquito is the vector it is food preference and not better and brighter bedrooms which protects man. A somewhat similar view is held by R. M. Gordon, E. P. Hicks, T. H. Davey, and M. Watson,[13] in connexion with *A. costalis* and *A. funestus* in Freetown, Sierra Leone, which move from house to house with daylight, and in which precipitin tests have never shown any blood other than that of man. Four times as many of them were found in badly lit as in well lit houses, but these writers suggest as an explanation that they leave the lighter houses at an earlier hour than they do the darker ones. This suggestion with its important practical implications will no doubt be tested with traps, for it is a matter which is unlikely to be left long as a mere suggestion.

INDUSTRY AND HEALTH

ON Tuesday afternoon Lord Leverhulme addressed the Royal Institute of Public Health at Eastbourne on industry and health, choosing the same subject as his father had done 23 years before. He addressed himself chiefly to the captains of industry who are still unconvinced of the need to coöperate with the medical profession, and he excluded from his view open-air workers, such as farmers and fishermen, who found it easier to keep healthy and fit than those engaged in more specialised industry. Sickness still accounted for an average absence of 12 days a year for each insured person; and of this absenteeism influenza and the common cold combined were responsible for 30 to 50 per cent. in most years, and 60 to 70 per cent. in such an epidemic year as 1928. He quoted with approval one of his own medical officer's dicta that until some definite preventive measures against influenza are discovered the only hope seems to lie in treating it as scarlet fever or other infectious diseases are treated, that is to say, by preventing the infected person from coming to work. Payment of wages during absence through sickness obviously plays an important part in determining whether the workers stop away or not, and Lord Leverhulme commended the generous view to his fellow industrialists. It also, he remarked, paid the employer to provide opportunities for exercise through games and recreations. His own firm, he said, was trying the experiment of issuing a daily dose of vitamin extract to a section of office workers to see whether in this way some measure of protection against the common cold could not be obtained. Finally, while admitting the difficulties of regular medical examination, he saw no reason why employers should not offer opportunities and encouragement on the strict understanding that the results of the consultations would not be disclosed to the employer. The congress is continuing until the end of the week.

FEES FOR MEDICAL REPORTS AND COURT ATTENDANCE

WHOLE-TIME medical officers of the London County Council are required to pay into the County Fund the fees they receive for attendance at court or for supplying medical reports to lawyers or insurance companies in accident cases, Workmen's Compensation Act proceedings, and the like. As the fees charged have been found to vary greatly, the L.C.C. has been taking steps towards standardisation. The resultant scale and conditions may be found a useful guide elsewhere. The charge for a medical report (to include the history of the case, prognosis, and the condition of the injured party) is fixed at £1 11*s.* 6*d.*, with a further £1 1*s.* for any subsequent report. Reports will not be furnished except upon written application by an injured party or his solicitor, or by any other interested person who has obtained the written consent of the injured party or his solicitor. Provided that such consent is given on behalf of the patient, the medical superintendent or other medical officer of the hospital, school, or institution concerned may be interviewed as to the patient's condition at a fee of 10*s.* 6*d.* The interview must be at agreed and reasonable times. On payment of the fee such information shall be given as may reasonably be required to the injured party's legal representative or to a medical practitioner acting for the patient or for an insurance company. As regards attendances at court, a medical superintendent or medical officer is to charge a fee of £3 3*s.* for the first day or part of a day, and £2 2*s.* for every additional day or part of a day. There is to be no attendance in court to give evidence about an injured party unless on subpœna.

It may not be out of place to remind medical practitioners of whom similar services are asked in civil cases that, if they want to safeguard themselves, they should obtain in advance a guarantee of an adequate fee where legal proceedings are in prospect. A doctor will not wish to make any unreasonable difficulty where it is a question of poor patients establishing their claims: but where he has no special duty to give evidence or information, he should remember that, as soon as he has disclosed the nature of the information, he has often surrendered his advantage in the preliminary negotiation of his fee.

THE annual Buckston Browne banquet of the Harveian Society of London will be held at the Star and Garter Home, Richmond, Surrey, on June 8th at 7.30 for 8 P.M.

ON Thursday next, at 5 P.M., Dr. Edward Mellanby, professor of pharmacology in the University of Sheffield, will give the first of his Croonian lectures before the Royal College of Physicians of London. The subject will be Nutrition and Disease—the Interaction of Clinical and Experimental Investigations, and the two following lectures will be delivered at the same hour on June 13th and 15th.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION. This association has arranged for a general medical and surgical course to be held from August 21st to Sept. 15th. The mornings will be occupied with general medicine and surgical diagnosis and minor surgery at the Western Infirmary and the Royal Infirmary, while the afternoons will be spent in studying special subjects. Clinical assistantships are also available in some of the institutions taking part in the work of the association. Further information may be had from the secretary of the association, at the University, Glasgow.

MARKETING OF GRADED MILK.—On May 24th Sir Hilton Young, the Minister of Health, received a deputation, introduced by Lord Iveagh, from the Certified and Grade A (T.T.) Milk Producers' Association. The object of the deputation was to bring to the notice of the Minister the objections felt by the Association to the scheme for the regulation of the marketing of milk, submitted to the Ministry of Agriculture by the National Farmers' Union. The deputation expressed the fear that this scheme, apart from its merits for the regulation of the marketing of ordinary milk, would be detrimental to the production of graded milks. The Minister said that from the point of view of public health he attached great importance to graded milk movement. He understood that the Minister of Agriculture would shortly hold an inquiry into the proposed marketing scheme, and he had no doubt that the Association's views would be fully considered.

[13] Annals Liverpool Sch. Trop. Med., 1932, xxvi., 273.

POST-GRADUATE LECTURES

WE publish this week three more summaries of lectures delivered at the post-graduate course which has lately been held at the Hospital for Sick Children, Great Ormond-street.

THE PREMATURE INFANT

(DR. DONALD PATERSON)

Causes of prematurity.—Undoubtedly any grave disease in a mother may cause her to give birth to an infant prematurely. Diseases such as syphilis, nephritis, and the toxæmia of pregnancy, heart disease, acute infectious fevers, and uterine infections, will all bring this about. In addition, poisons such as lead and arsenic may also do this. Lately Dr. Lucy Wills has shown that an absence of vitamin B is commonly responsible for premature labour in India. The presence of twins, or some malformation in the child itself, can be looked on as other causes.

Damage to premature infants.—Now the morbidity is extremely high in premature infants, quite apart from the high mortality. Among those that survive, a proportion show mental defect or some after-effects of cerebral hæmorrhage. There can be no doubt that premature infants are especially prone to bleeding from the cerebral vessels during birth. This may possibly be due to the fragile condition of the blood-vessels, or to the low blood calcium which the child has at birth. The major portion of the calcification of the infant's bones occurs in the last two months of intra-uterine life.

Care of premature infants.—These infants have a poor ability to maintain their *body temperature* and manufacture heat. They are best nursed at home, in a cot or basket, carefully lined with a blanket, and heated either by being close to a fire, or, better still, by hot-water bottles, electric-light bulbs, or a special electric pad. This latter should be over the top of the infant rather than under it. The temperature should be taken frequently until it can be stabilised.

Clothing.—Rub the infant with oil rather than bathe it. Use cotton-wool as napkins, and wrap the body in cotton-wool and woolly garments, and avoid exposure for the first few days.

Avoidance of infections.—Premature infants do best in their own homes, away from other children, since they are so prone to be carried off by intestinal or respiratory infections. The greatest care on the part of nurses, parents, and friends should be taken in this respect.

Feeding.—It is not generally understood that the premature infant requires relatively many more calories than a full-term infant. For instance, a 6 lb. infant would require about 15 oz. of breast milk in 24 hours to maintain a steady gain, whereas a 4 lb. premature infant will require about 12 oz. to do the same. A good working rule is to give 3 oz. of breast milk per lb. of the baby's weight per day. It is best to feed the baby two-hourly by day and three-hourly by night. That is at 6 A.M., 8 A.M., 10 A.M., 12 noon, 2 P.M., 4 P.M., 6 P.M., 9 P.M., 12 midnight, and 3 A.M. This makes ten feeds in all.

Commence giving 1 oz. of breast milk at each feed and add a further drachm to each feed per day until the infant commences to gain. Once a gain has commenced, cease adding until there is a further failure to progress. Breast milk must be obtained until the mother's own supply has been established. It is best at first to express the milk, and feed by premature bottle, or "Bellcroyd" feeder, or with pipette.

For those somnolent and slightly jaundiced infants, a feed or two of glucose water, given down a fine catheter directly into the stomach, is desirable. The practice of feeding with œsophageal tubes can be safely recommended, and is practised most successfully in the case of very feeble infants.

Choice of food.—Where breast milk is not available lactic acid milk and water, equal parts, with a teaspoonful of sugar added to each 4 oz., makes a suitable mixture, or unsweetened condensed milk, one part, water three parts, with a teaspoonful of sugar added to each 4 oz. of the mixture, or one of the humanised dried milks to which has been added 2 minims of B.P. lactic acid for each scoop of the dried milk used in the feed.

The premature infant must get its feed easily, or it will be too exhausted, and it must be held up afterwards to be given a chance to regurgitate the swallowed air. Daily weighing is essential.

Prevention of rickets and anæmia.—Since there is such marked tendency for premature infants to become anæmic and rachitic, steps should be taken within the first fortnight after birth to prevent this from occurring. A grain of iron and ammonium citrate should be given once daily, and later twice daily at intervals during the first year of the child's life. One of the cod- or halibut-liver oil preparations or synthetic preparations containing vitamins A and D should be administered. Mixed feeding should be commenced at an early age, not later than six months. Advantage should be taken of real sunshine, and the infant's body should be exposed when possible. Strong milk mixtures, and the addition of soups and cereals, should be given as well as the mother's breast milk during the fourth and fifth months. Some calcium preparation such as calcium lactate, or calcium gluconate, will undoubtedly also help to make good the infant's lime deficiency.

TUBERCULOUS GLANDS OF THE NECK

(MR. L. E. BARRINGTON-WARD)

THERE has been a noticeable reduction in the incidence of glands of the neck in the past 20 years. This can be attributed to the regular examination of school-children, and improved methods of dealing with infected teeth and septic conditions of the nose and throat. For the purpose of this lecture I have analysed a continuous series of 161 cases on whom I have performed a radical operation for the removal of tuberculous glands of the neck for ten years—1923–1932 inclusive.

Little has been added to our knowledge in recent years as to the *pathology* of glands of the neck. The tonsils are still the most important focus of infection. In 97 of 161 cases the "tonsillar" gland was the one chiefly affected, and in 43 others the glands of the anterior triangle were diseased, with the probability that the infection had come through the tonsil. The onset in most cases was attributed to a sore-throat. Often the whole family had been affected, and in one or two of the members a gland had persisted and become tuberculous. In many cases the history was given that a gland enlarged after a sore-throat, subsided, and then after some months increased progressively in size. It would seem that a septic infection predisposes the gland to an attack by the tubercle bacillus. Every gland was subjected to

bacteriological and histological examination after removal, and all were found to be tuberculous; only in two was there found an added infection by a streptococcus.

In the *diagnosis* the appearance of a tuberculous gland is characteristic. It appears as a firm elastic swelling, usually in the digastric triangle, elongated, fairly movable, not tender, with smaller seedlings palpable below the gland in the anterior triangle and under cover of the sternomastoid reaching back to the posterior triangle. The amount of periadenitis varies with the age of the child and the intensity of the infection. Infants under one may react to the infection as if it were acute, and a hard brawny mass in the neck, associated with a high temperature (103° F.), is sometimes due to a tuberculous infection. Usually the onset and progress is less rapid. Of my cases 25 per cent. gave a history of over one year's duration, 59 per cent. over two years, before coming to operation.

Caseation and liquefication in a gland is an insidious process, and it may be very difficult to determine what stage the gland has reached. If fluctuation is obvious, then it is almost certain that an extraglandular abscess has formed. When the swelling has become more evident, often described by hospital parents as the "dropping" of the gland, then it is likely that the deep facial envelope has been perforated and an abscess under the subcutaneous tissue has formed.

It is very important from the point of view of treatment to recognise these stages. If glands of the neck are to be treated efficiently, it is highly desirable to institute treatment before infection has passed through the gland capsule.

Prognosis.—This disease is essentially a local one, and with proper treatment the outlook is good. The only exception is in infants under the age of one. Two of my cases, aged 8 months and 1 year, died of tuberculous meningitis some weeks after operation—both the subjects of a rather acute tuberculous abscess which had been incised and curetted.

Treatment.—Everyone is agreed on the treatment of tuberculous glands of the neck up to a point, but thereafter there is considerable divergence. On the first appearance of a gland, every possible source of infection must be investigated, and, if necessary, treated. Septic tonsils are dissected out, adenoids are removed, septic teeth are eliminated, and skin infection treated. The child is put in the best possible surroundings for the general health, depending on the time of year and the family resources, either the seaside or the country. Rest is of great importance. In mild cases avoidance of games and regular rest periods during the day will be sufficient; in more severe cases the neck should be splinted with a simple rectangular splint or a light metal jury-mast. In the worst cases absolute rest in the recumbent position is advisable. With the failure of such expectant treatment, the problem then arises what more should be done, and here the two schools of practice diverge. Some believe that the formation of abscesses is to be expected and put their trust in repeated aspiration and the application of various rays. Ultra-violet, infra-red, X rays, and radium rays have all been tried, and their number is a measure of their insufficiency. General sun rays applied to the body is a different matter and can only do good, but it is as a rule insufficient.

Others believe in more radical treatment and endeavour to cure the disease before an abscess forms. This has always been my practice. If a gland is of such a size when first seen that it is unlikely to go away naturally, if it persists despite adequate conservative treatment, if it shows any sign of softening and abscess formation, then removal by dissection is by far the most satisfactory method of treatment. In these 161 cases there was no operative mortality. If a clean dissection is possible, the average stay in hospital is ten days. Of this series 46 per cent. already had an extraglandular abscess before operation, and 13 per cent. had a sinus, but the great majority healed by first intention.

An abscess is no contra-indication to dissection. If care is taken in planning the incision in one of the natural creases of the neck, the scar in time becomes almost invisible. I have seen the worst scarring from multiple aspirations with subsequent sinus formation and discoloration of the skin by rays. The only complication that has followed operation has been an injury to the spinal accessory, or the third and fourth cervical nerves in the posterior triangle, shown by the development of some wasting and weakness in the upper trapezius. This happened in four cases, all instances of widespread tuberculous infiltration of fascia and muscles of the triangle. One case suffered from a slight traction injury of the fifth and sixth cervical nerves, due to overstretching of the plexus during operation.

If all the glands in the affected area are removed, there should be no recurrence, and glands in other situations may improve with the removal of the main mass of disease. In 12 cases operation had to be performed on both sides of the neck. In conclusion, radical removal of glands of neck appears to be justified by its absence of mortality, and the comparative rapidity and permanence of its cure.

ASTHMA IN CHILDHOOD

(DR. BERNARD SCHLESINGER)

ASTHMA most often has its beginning in childhood, and it is therefore at this period above all that its study should commence. In childhood the disease is in its purest form. Physical and psychoneurotic influences play no great part, and the manifestations differ in many respects from those encountered in adults. In only a proportion of children does the disease persist into adult life, when morbid changes in the lungs, such as chronic bronchitis and emphysema, become troublesome complications. Certain psychological changes can also later render the condition more chronic, and habit has a certain effect. Osler's famous case is a good example. This was in a young girl who was so sensitive to roses that close association with them always produced asthma. On one occasion she was given an artificial rose to smell and promptly had a severe attack.

The *prognosis* of asthma depends partially on its severity and duration, so that cure is greatly facilitated by prompt recognition of the disease and investigation of its possible cause.

The *age of onset* may be very early, and the disease may well begin during the first few months of life. Although the correct diagnosis is now more frequently made in childhood, the disease still often passes undetected during infancy. Repeated short attacks of bronchitis may at first fail to reveal the true underlying cause. Later in childhood the disease resembles more and more the adult types of spasmodic and bronchitic asthma. Spasmodic asthma has a stronger hereditary element than bronchial asthma. The latter often follows a bad attack of whooping-cough or broncho-pneumonia which has left behind some chronic focus of inflammation in that lung. Heredity plays a great part in the *ætiology*; a history of asthma

in some previous member of the family is obtained in about 30 per cent. Either mother or father is frequently affected, but in quite a number of cases one generation is missed and the history dates back to the grandparents. If allied conditions are counted, such as hay-fever, migraine, urticaria, or bilious attacks, the heredity figure is raised to about 50 per cent.

The question of allergy in asthma is complicated but of great importance. Children are sometimes hypersensitive to substances with which they have never previously been in contact. In such cases the hypersensitiveness may have been inherited. Yet, although hypersensitive parents often beget hypersensitive children, it by no means follows that the sensitisation is to the same substance. Rather than a hypersensitiveness to a particular object the child inherits a readily sensitable constitution. In short, hypersensitiveness may be inherited or acquired, which in certain cases may lead to symptoms of asthma. One cannot help remarking the common type of parents who bring their asthmatic children for medical advice. Artistic, alert, or highly strung temperaments are frequently encountered. The intelligentsia certainly appear particularly prone to the disease, and asthmatic children are on the whole clever, bright, and mentally active.

It is usually found that some exciting factor sets off an attack. Various stimuli can bring this about, such as fright, excitement, or anxiety, or on the other hand a cold or gastro-intestinal disturbance. Children's parties offer a combination of excitement and dietetic excess and often precipitate an attack the same evening. A windy day or riding outside a bus is invariably followed by asthma in some cases, whilst in others exertion, such as running, may have the same effect.

Among the *associated disorders* urticaria, eczema, and ichthyosis are quite frequently seen. Some asthmatic children are also liable to have periodic attacks of migraine, cyclical vomiting, vertigo, and lapses of consciousness. In fact, with the tendency of asthma to disappear at puberty, one of these other manifestations may take its place. Other allied spasmodic affections of the upper respiratory tract are hay-fever, paroxysmal sneezing, and laryngitis stridulosa.

In infants the *symptoms* are usually only those of bronchitis at first. The child is said to be repeatedly "chesty," and sometimes the condition is even mistaken for broncho-pneumonia. Very occasionally the infant exhibits a peculiar form of the disease. It occurs when artificial feeding is first begun. After the first few mouthfuls of cow's milk severe and alarming symptoms of shock, profuse vomiting, pyrexia, and a wheezy cough set in. Skin testing shows that the child is hypersensitive to cow's milk protein. Goat's milk may then be found to suit, but occasionally a diet may have to be devised devoid of all forms of milk.

In older children pain in the limbs, head, and abdomen is frequently felt, particularly during an attack. These are favourite situations for rheumatic manifestations, and there is a good deal in favour of the view that these fleeting pains, common to rheumatism and asthma, may be evidence of a general allergic reaction. Coughing with much sputum which finally produces vomiting is one of the characteristic features during childhood. Intestinal disorders are also not uncommon, and together with constriction of the involuntary bronchial musculature, spasm of the intestinal muscles may occur, producing symptoms of mucous colitis with slime in the stools. Pliability of the chest wall in childhood may lead to rib recession and sucking-in of the soft tissues at the suprasternal notch as in laryngeal diphtheria. In some infants the thymus is so large that it presses on the trachea and interferes with respiration. The condition goes by the somewhat misleading name of Kopp's asthma.

One of the first and most obvious lines of *investigation* is the search for a local focus of infection. This may be in the nasopharynx, the lung, or the abdomen. Septic tonsils and adenoids may give rise to recurrent catarrh or tonsillitis, which on each occasion precipitates an attack of asthma. It is only in cases with this history that removal of tonsils and adenoids is likely to benefit the asthma. Operations on healthy tonsillar tissue will only lead to disappointment.

The lesions in the lungs most frequently seen are patches of fibrosis, enlarged glands, and bronchiectasis. Radiological examination will greatly facilitate their discovery. The course of such cases is apt to be obstinate, and they are most benefited by suitable mild seaside convalescence. In asthmatic children with chronic intestinal indigestion treatment should obviously be centred on the alimentary tract, and with a suitable diet and mild alkaline laxatives these gastro-intestinal upsets and the asthma which follows them can be largely prevented.

By applying various extracts in pastes or solutions, either by scratching or intradermally, it is sometimes possible to discover the particular substance to which the asthmatic is allergic, and thereafter exclude it from the diet or the patient's environment. Unless reliable extracts are used, preferably freshly prepared solutions, skin testing will prove a failure, and even under the best possible conditions this method is not so helpful as might be anticipated. Infants are more often sensitive to foodstuffs, whereas older children more frequently show positive skin reactions to epidermal derivatives. In this country asthmatic children are so frequently sensitive to feathers that it is worth while replacing feather pillows and bedding by kapok stuffing in every case.

Many asthmatic children have a greatly diminished secretion of hydrochloric acid in their gastric juice.

The *treatment* should be approached from various angles. If a specific protein is discovered to be responsible for the attacks, steps must be taken to prevent the patient coming into contact with it. When this is not possible, desensitisation may be actively induced by a course of carefully graded subcutaneous infections of the particular foreign protein in question. Nasopharyngeal operations should be strictly limited to those cases where the asthmatic attacks are repeatedly the outcome of a definite acute exacerbation of a chronic nasopharyngeal infection. Drugs are of considerable use. The prolonged administration of antispasmodics, such as the tincture of stramonium and lobelia combined with potassium iodide, often lessens or abolishes the attacks entirely. In other cases a mixture of dilute hydrochloric acid, liquor adrenalini, and syrup of senna may succeed when antispasmodics have failed.

Occasionally ephedrine will be found of great value, but not very often. Change of environment often abolishes the attacks for the time being. Change of climate may have the same beneficial effect, but whereas the south coast of England may suit some, others will do better in a dry inland hillside locality. Windy places are not to be recommended. In children, as in adults, during an acute attack adrenaline is the most valuable. Inhalations of ethyl iodide from a broken capsule may also give relief. Unfortunately there is no one specific cure for asthma. Hosts of remedies have been recommended. Many doctors have been deluded in their enthusiasm and have become therapeutic faddists.

SPECIAL ARTICLES

THE LISTER INSTITUTE OF PREVENTIVE MEDICINE

THE WORK IN PROGRESS

THE activities of the four main departments of this Institute are described under subject headings in the thirty-ninth report of the governing body which was presented at the annual general meeting on May 24th. The number of scientific workers on the staff, including research fellows and students and honorary workers, under the general direction of Prof. J. C. G. Ledingham, F.R.S., is now 29. Of these ten have medical qualifications. That hospitality has been offered to many workers besides these is clear from the list of authors of original articles published from the laboratories of the Institute during the year under review. It is to these articles that reference must be made for an adequate account of the results obtained at the Institute, but some brief indication of the work in progress is set out below. It is satisfactory to observe throughout the report evidence of close coöperation between members of different departments, and the work is noticed here under subject rather than departmental headings.

STUDIES ON VIRUSES AND SEROLOGY

That the elementary bodies demonstrable in the lesions of vaccinia represent the actual virus agents would now appear to be fairly completely established by the work of Prof. Ledingham and of Dr. C. R. Amies. Variola and vaccinia have been found antigenically very closely related, the differences noted being largely quantitative rather than qualitative. Dr. Amies has confirmed the presence of Paschen's elementary bodies in human varicella fluid, the bodies being a little smaller than those of vaccinia-variola; serological evidence makes it probable that these elementary bodies represent the actual ætiological agents.

Dr. G. H. Eagles and his collaborators have succeeded in the cultivation of vaccinia virus in cell-free media, but only when granular material derived probably from cells or nuclei is present.

The antigenic constitution and immunising properties of anti-plague vaccine are being studied by Dr. H. Schütze, of anti-dysentery vaccines by Miss D. Steabben, Ph.D., and of spore-bearing anaerobes by Mr. D. W. Henderson. Anti-dysentery vaccines prepared from bacteria grown at temperatures higher than 37° C. appear to afford greater protection than those grown at the usual body temperature, but their detoxication by formalin is not easily accomplished.

The serological diagnosis of the typhus group of diseases still depends on agglutination tests with various types of *B. proteus*, and the work of Dr. A. Felix indicates that serological types of *B. proteus* may yet be isolated, which correspond to the still unknown main agglutinogens of the viruses of "fièvre boutonneuse" (Tunis), the tick-bite fever of South Africa and other varieties of typhus. The importance of such *proteus* types is obvious, since the present means for diagnosing these diseases by the demonstration of low titre group agglutinins are very unsatisfactory. In the course of his experiments Dr. Felix has found that the association between the rat and *B. proteus* is much closer than has been hitherto recognised. Tame rats, when kept on a diet deficient in vitamin A, developed abscesses in various organs from which *B proteus* could be isolated in pure culture. Although no strain of the types of *B. proteus* used for typhus agglutination tests has been encountered among these cultures, yet O agglutinins of significant titres for one or the other of the three types have been found in the serum of normal, tame rats of London stock. These facts constitute a serious source of error in experimental work with typhus viruses in the rat.

Mr. J. T. Edwards, D.Sc., working under the supervision of Dr. J. A. Arkwright, has failed to demonstrate the existence of carriers among guinea-pigs which have recovered from an attack of foot-and-mouth disease. The susceptibility to this disease of tame rats varies with diet as well as with age and sex. A relative poverty of diet, especially if sufficient to hinder growth, may prevent the appearance of overt signs of the disease.

ENDOCRINOLOGY

Dr. V. Korenchevsky and his collaborators have studied the action and assay of testicular hormone and the mechanism of the action of vitamin A deficiency on various organs and functions. In the previous report a method of assay of testicular hormone was described in which castrated rats were used as the experimental animals, and the changes in the weight of the prostate with seminal vesicles were suggested as the basis for the estimation of a rat unit of the hormone. Recent experiments have shown that it is possible to use for assay of the testicular hormone not only rats belonging to one litter but also rats of different litters, under certain conditions. Attention is drawn, however, to the differences in body-weight, in weight of prostate plus seminal vesicles, and in weight of spleen in normal untreated animals of different stocks, and to the need for a definition of standards for stock animals, and of methods of preparation for assay, if international biological standards for testicular hormone are sought.

In experiments with a synthetic diet, from which cod-liver oil was absent and iodine not added, the thyroid glands of rats became enlarged. The addition to such a diet of an iodide in an amount equivalent to that present in cod-liver oil prevented enlargement of the thyroid.

Dr. J. M. Gulland has continued attempts to purify the oxytocic hormone of the pituitary body. It has been stated by various investigators that the oxytocic hormone is destroyed by the proteolytic enzymes, trypsin, erepsin, and papain. Dr. Gulland has reason to believe that the preparations were complex mixtures of enzymes, possibly not even all proteolytic in character. He concludes from his own experiments that the enzymes which cause the destruction are not those named, but others associated with them.

PROTOZOOLOGY

Miss Muriel Robertson, D.Sc., working with the protozoon *Bodo caudatus*, has obtained very steady growth in counted cultures transferred daily in various fluids with the addition of a known concentration of separately grown bacteria as food-supply. It has been found that the addition of the filtrate from a 21- to 30-hour culture very greatly reduces the lag in the early hours of the growth, but so far has not been found to advance or retard encystation. The work on the effect of the exposure

of the bodo culture to gamma ray irradiation has been continued with the radium lent by the radium committee of the Medical Research Council. The relative growth in the presence of the radium as compared with the normal control was studied and some results published. Certain changes which persisted long after removal from the radium were noted in strains of bodo irradiated continuously for 5–30 days, and single bodos isolated from these modified cultures produced strains which retained the altered characters. It has, however, not been found possible to repeat the production of this heritable change by irradiation in cultures in all media.

VITAMINS

Standardisation.—Examination by Miss E. M. Hume, Miss Henderson Smith, and Mrs. I. Smedley-MacLean, D.Sc., of two samples of pure re-crystallised carotene, which substance has been adopted provisionally as the International Standard for vitamin A, shows that the nature of the solvent used is of predominant importance in estimating the biological value of carotene. The biological results are more or less in conformity with the colorimetric. A new sample (1932) of the standard for antineuritic vitamin B_1, a concentrate from an extract of rice polishings, has been tested by Mr. T. F. G. Prunty, using the growth method with rats, and has been found equal in value with the old sample (1930). This result agrees with that obtained at four other laboratories.

Vitamin A.—The factors responsible for the failure of normal growth and changes in the sexual and other organs in animals on a vitamin-A deficient diet were studied by Dr. Korenchevsky and his co-workers. The absorption of food from the alimentary canal was found to be normal during the greater part of the deficiency. The conclusion reached was that vitamin A plays an important part in the constructive "anabolic" process of the metabolism of the organism, and has in addition an "appetite-producing" principle, both of which functions are essential for the building of the tissues, for increase in body-weight, and for growth of the animal. The direct influence of the vitamin-A deficiency and not the accompanying loss of appetite was considered to be the chief cause of the decrease in size of the seminiferous epithelium of the testes. In tests of carotene as the source of vitamin A the permanency of the yellow colour of the carotene in any solvent indicates the suitability of the solvent. Coconut oil was found by Miss Hume and her collaborators to be the best solvent, the minimum protective dose of carotene for the rat in this solvent being 1·0γ or less.

The origin and distribution in nature of the anti-rachitic vitamin D have been further studied in copepod material from the ocean specially collected by Dr. E. E. Atkins; plant material, notably lettuce, has also been tested, and the effects of irradiation of such material estimated.

Vitamin C.—Hexuronic acid is a compound isolated by Prof. Szent-Györgyi some years ago from the adrenal gland and from fruits and vegetables. Crystalline hexuronic acid is very active, and the possibility of its identity with vitamin C is being studied by Mr. S. S. Zilva, D.Sc. The reducing properties of the active fractions of lemon juice, though they do not vary directly with the antiscorbutic potency, are considered by Prof. Tillmans to run sufficiently parallel to justify the assumption that they are both due to hexuronic acid. Observations which may have a bearing on this relationship have been made by Dr. Zilva. When the suprarenal glands from guinea-pigs which subsisted on a mixed diet with a liberal supply of cabbage were immersed in silver nitrate, the glands stained black, and this is attributed, at least in part, to the presence of hexuronic acid. The suprarenal glands from guinea-pigs, maintained for months on a scorbutic diet, which received about six times the protective dose daily in the form of decitrated lemon juice, when treated in this way did not stain. This observation is being extended in collaboration with Dr. J. Gough (Cardiff). The effect of freezing upon vitamin C in apples was tested on Bramley's seedling apples. When these were frozen for 14 months at −20° C., very little loss of the vitamin was observed. In apples stored at −5° C. for seven months the loss in vitamin C was very great, in those stored at −10° C. the loss was less but amounted to almost 50 per cent., but in apples stored at −15° C. the loss was only just appreciable, whilst those stored at −20° C. showed no loss.

The Vitamin B Complex.—Further studies on the Y factor of this complex have been carried out by Miss H. Chick, D.Sc., Miss A. M. Copping, and Miss H. M. Jackson. Apart from growth-limitation in absence of the factor, no syndrome of factor Y deficiency can be defined, but animals which have remained under experiment for eight months or longer have shown skin lesions which are not typical of vitamin-B_2 deficiency. The Y factor seems to be present in concentrates prepared from brewer's yeast. The Institute was able to furnish Dr. Lucy Wills with a series of tested fractions of the vitamin B complex, on a scale suitable for therapeutic trials with human cases. Her results seem to disprove the suggestion made by Strauss and Castle that the active fraction which makes marmite effective in curing some forms of anæmia might be vitamin B_2. Investigations into the growth-promoting and anti-dermatitis functions of vitamin B_2 are being studied, and also the effect of changes in the pH on the heat stability of this vitamin.

In other laboratories it has been shown that the growth of rats is retarded when the proportion of protein in the diet is high, unless additional quantities of the heat-stable fraction of yeast extract (? vitamin B_2) are given as supplement. This has been taken as evidence of the existence of a definite relationship between the requirements of protein and of vitamin B_2 in the diet. Miss M. H. Roscoe and Mr. Prunty have repeated this work and find that the effect is due to the lowered consumption of the high-protein diet, so little being eaten that the total intake of yeast extract is insufficient for growth when this latter is incorporated as a percentage in the diet, instead of being given separately as a measured supplement. Since crude yeast extracts contain more vitamin B_1 than vitamin B_2, the deficiency is primarily one of the latter vitamin.

BIOCHEMISTRY

The nature of the individual phosphoric esters formed during alcoholic fermentation and their rôle in the breaking down of the carbohydrates have again been subjects of continued study by Prof. R. Robison and his collaborators. In further experiments on the mechanism of calcification Prof. Robison and Miss Adèle H. Rosenheim have shown that deposits of barium, strontium, and magnesium phosphates can be obtained in vitro in hypertrophic cartilage by the agency of the bone phosphatase; in absence of phosphoric esters, however, such deposits were very rarely found. This behaviour is in marked contrast to that of such cartilage towards

supersaturated inorganic solutions of calcium phosphate, and suggests that the second calcifying mechanism is to some extent specific for the bone salt, calcium carbonato-phosphate. It has been further shown that calcification in vitro of the kidney, lung, and aorta of normal and rachitic rats can be obtained by agency of the tissue phosphatases. No calcification of these tissues has, so far, been effected in highly supersaturated inorganic solutions even during prolonged immersion at 37° C. It would seem that these tissues do not possess the second mechanism responsible for calcification in such inorganic solutions. Rabbit aorta, which is recognised as prone to calcification in vivo, differs from that of the rat in being devoid of phosphatase. It was, therefore, interesting to find that rabbit aorta could be calcified by prolonged immersion in supersaturated inorganic solutions. The presence of phosphoric ester, as was expected, had, in this case, no beneficial effect on the calcification. The comparative study of the phosphatase activity of animal tissues, to which reference was made in the last report, has been continued by Prof. Robison and Dr. Marjorie Macfarlane.

The wide divergences found in the pharmacological properties of chemical substances which differ even so little as in the position of a single group in the molecule is of importance in chemotherapeutics. In view of the ease with which their sensitivity to reagents may be assayed, the spermatozoa of the guinea-pig have been used in the investigation of this phenomenon by Dr. Gulland and Mr. T. H. Mead in connexion with the action of phenolic aldehydes and their ethers on the spermatozoa. Their work arises from the isolation of the products of condensation of barium glycine with the more spermicidal, but not with the less active, aldehydes.

Biological Value of Proteins.—Dr. Margaret Fixsen and Miss Jackson, working in collaboration with Dr. Chick, have continued their study, by the balance sheet method, of the biological values of certain proteins of animal and vegetable (cereal) origin. Whole milk proteins proved the most valuable of those studied, being given a value of 86, when fed at a level of 7 per cent. in the diet; caseinogen was next with a value of 76, when fed at a 6 per cent. level. Whole wheat, whole yellow maize, wheat germ, maize endosperm, and lactalbumin were of equal value (65–70 at 6 or 7 per cent. levels) and were superior to wheat endosperm. The proteins of lowest value were heated caseinogen and a preparation made from the organs and muscles of rats. The figures indicate that caseinogen is superior to lactalbumin for maintenance, that these two proteins have a supplementary action towards one another, and that the proteins of the embryo of wheat are more valuable than those of its endosperm. The fact that prolonged heating causes a deterioration in the biological value of caseinogen has been confirmed.

On the basis of the values obtained during short periods no satisfactory explanation of the association of pellagra with the consumption of maize rather than of wheat can be furnished. No difference in digestibility could be found between wheat and maize, cooked or raw; the reported inferior value of maize, compared with wheat, in securing growth in young rats is attributed only to the lesser quantity consumed, owing to the relative unpalatability of uncooked maize.

Coagulation of the Blood.—Dr. J. O. W. Barratt has investigated methods of estimation of fibrinogen and thrombin, has selected suitable concentrations of these substances as standards, and has thus been able to establish as a basis units for expressing the titre of solutions of fibrinogen and thrombin.

National Collection of Type Cultures

This collection, maintained under the Medical Research Council, is housed at the Institute under the curatorship of Dr. R. St. John-Brooks. During the year under review the number of strains of bacteria and fungi distributed to workers at home and abroad in the various fields of microbiology has again exceeded 5000 and some 200 types, including a considerable number of new species, have been added to the collection.

The international nomenclature committee of the International Society of Microbiology of which Dr. St. John-Brooks, is one of the permanent secretaries, is proceeding with a programme of preliminary work, which has for its object the conservation of *Bacillus* as a bacterial generic name, and the fixing of type species and of type or standard cultures. It has also appointed a subcommittee to advise upon the classification of the *Salmonella* group of organisms.

ALGERNON FIRTH INSTITUTE OF PATHOLOGY: UNIVERSITY OF LEEDS

In 1894 the Leeds Medical School was transferred from Park-street to a new building in Thoresby-place, alongside the General Infirmary. In 1919 a great influx of students followed demobilisation and began seriously to tax accommodation, and while it was urgent to take steps to meet the situation there was little room for expansion of the building. The prescience of the late Mr. A. G. Lupton, then pro-chancellor, led to the securing by the University of the site in St. George's-road on which the new Institute of Pathology now stands. Several of the buildings on this site were converted temporarily into laboratories and class-rooms for bacteriology and biochemistry, thus relieving congestion in the Medical School itself, and providing additional accommodation also for the rapidly expanding bacteriological work of the infirmary and city. As soon as funds became available under the general rebuilding scheme of the University, extensions of a more permanent kind were commenced. First, a new wing was added to the existing school building on the fourth side of the quadrangle, till then unoccupied. This wing was opened in 1930 and provided much-needed accommodation for the studies of physiology, biochemistry, and pharmacology, and, as a temporary measure, for bacteriology also. The opening of this extension allowed the clearing of the St. George's-road site to be proceeded with, while the munificent gift of £25,000 by Sir Algernon Firth "towards the building of an institute in which accommodation should be provided for cancer research" enabled the University to assign the necessary funds, £50,000, for a complete new pathological institute.

The new building, which is the work of Mr. J. C. Procter and Mr. F. L. Charlton, associated architects, was formally opened on April 25th last by Sir Algernon Firth, whose name it bears. It is constructed of brick, except for a small amount of Portland stone in the plinth and main entrance. The span is broken by steel stanchions on each side of the main central

corridors, but externally the floor girders are supported on the brick walls—i.e., it is not a steel-framed building. The Charles Brotherton Museum on the top story has over 4000 sq. ft. of floor space, and is lighted by three tiers of clerestory windows glazed with special diffusing glass to prevent as far as possible the bleaching of specimens. The upper tier of windows is top-hung to open out, the whole of this range being electrically operated. In the rest of the building the windows are steel frame, and the fenestration is for the most part in regular bays with windows 3 ft. 8 in. and piers 3 ft.

All the services are exposed, the main runs being carried in ducts over the corridor ceiling in each floor. These are served from two vertical ducts, one on each side of the staircase well, one carrying the electrical work and cold water-supply, the other hot water, heating mains, and gas. For identification purposes each service and run is ringed at intervals with a key colour. All internal drainage is exposed, that from the laboratories on one floor being carried in glass-lined cast-iron pipes on the ceiling of the floor below. Heating is by low-pressure, pump-circulated hot water, and the hot water-supply is by gravity, each being derived from duplicate coke-fired boilers in the basement.

The ground floor is devoted to bacteriology, and includes in addition two practical class-rooms for general use with accommodation for 70 and 20 students respectively. The first floor is for experimental pathology and cancer research, and includes also the general lecture theatre, with places for 84 students. The second floor is devoted to pathology, including pathological chemistry, together with the animal rooms, which open on to an outside balcony, thus preventing any odour from reaching the interior of the building.

The building as a whole is very pleasing to the eye, and is certainly well adapted to its purpose. It should provide adequately for the pathological and bacteriological needs of the Leeds School of Medicine for many years to come.

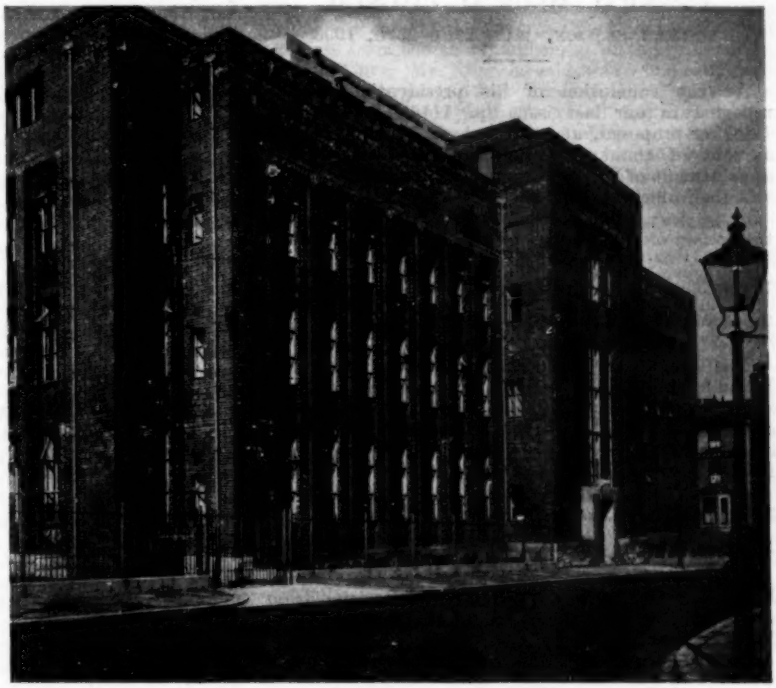


FIG. 1.—The Algernon Firth Institute of Pathology, University of Leeds: St. George's-road frontage.

FIG. 2.—The Brotherton Museum.

GENERAL MEDICAL COUNCIL

SUMMER SESSION, MAY 23RD–25TH, 1933

AT the conclusion of his presidential address, reported in our last issue (p. 1146), Mr. Douglas Hacking proposed, and Sir Robert Bolam seconded, a vote of thanks to Sir Norman Walker. The appointment of the following members of the Council was then officially notified :

Reginald Cecil Bligh Wall, D.M., as representative of the Society of Apothecaries in London for one year from Dec. 4th, 1932.

Sir Thomas Myles, C.B., F.R.C.S.I., as representative of the Royal College of Surgeons in Ireland until Dec. 31st, 1933.

Edwin Matthew, M.D., F.R.C.P., as representative of the Royal College of Physicians of Edinburgh for five years from May 2nd, 1933.

The Council directed the erasure from the Dentists Register of the name of William Isaac Tromans, who was reported by the Dental Board for wrongfully obtaining payment by means of incorrect certification in dental letters ; and ordered the restoration to the Dentists Register of the following names :

Mihrane Haroutune Chirinian, registered as of 26, Coventry-street, W.1.

Archibald McNab Robertson, registered as of Portobello, Edinburgh.

The Registrar was directed to restore the name of Harry Simpson Harling to the Medical Register, from which it had been erased under Section 29 of the Medical Act, 1858.

Penal Cases

ALLEGED ADULTERY WITH A PATIENT

The Case of Bertram Mayhew Bone, registered as of c/o Messrs. Maples and Sons, Solicitors, New-road, Spalding, M.B., C.M. 1897, U. Edin., F.R.C.S. Edin. 1906, who had been summoned to appear before the Council on the following charge :—

" That being a registered medical practitioner you abused your position by committing adultery with Evelyn Mary Ward, a married woman, whom and whose family you had attended professionally, of which adultery you were found guilty by the decree of the Probate, Divorce and Admiralty Division (Divorce) of the High Court of Justice, dated Nov. 17th, 1932, in the case of Ward *v.* Ward and Bone, in which you were the co-respondent. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

Dr. Bone appeared in answer to his notice, and was accompanied by Sir Henry Curtis Bennett, K.C., and Mr. Christmas Humphreys, counsel, instructed by Messrs. Routh, Stacey and Castle, solicitors.

Mr. Harper, the Council's solicitor, put the facts before the Council, explaining that there was no complainant in the case. Attention had been drawn to it by a report in the *Times* of the proceedings in the Divorce Court, in the course of which the President had said that the co-respondent had been at the material time a medical practitioner attending the family of the petitioner and respondent. Mr. Harper had, in accordance with his custom, got into communication with the petitioner's solicitors, asking in the first place whether the petitioner would bring a case before the Council, and in the second place whether he would assist Mr. Harper by lending documents. To both letters he had received a definite negative.

Mr. Harper quoted from the shorthand report of the divorce case, which had been undefended, although Dr. Bone had been represented by a leader and a junior. Dr. Bone had started practice in 1906, had joined the army in 1914, and had been invalided out from Gallipoli in 1916. He had met both the petitioner and the respondent in that year ; they had not then been married. He had returned to his practice. In 1919 petitioner and respondent had married, and in 1929 they had moved into the district where Dr. Bone practised. In August, 1930, he had been called to attend one of the boys, and in August and September, 1931, he had attended Mrs. Ward professionally at her home, and had also given her, in his surgery, some radiant-heat treatment recommended by a London specialist. In December, 1931, he had gone to Harrogate for treatment, and in January, 1932, Mrs. Ward had gone to Huddersfield. She had then met Dr. Bone at Leeds, and had returned to her husband on Jan. 13th and told him that she had had dinner with Dr. Bone on the previous evening. He had had no previous suspicions of her, but then told her that she should get another doctor. On Feb. 2nd she had motored the boys to school and had not returned, but had sent a telegram followed by a letter. From Feb. 2nd–7th she and Dr. Bone had stayed in a hotel in Windermere as husband and wife. In the letter she had said to her husband that he would probably be surprised to get her telegram, that she and Dr. Bone had loved each other desperately for a long time and had tried hard to fight against their love and do the right thing, but had decided that they could not live their lives apart any longer. She had returned the previous night to see if Mr. Ward still loved her, but the reception she had received had convinced her that he did not, and she could not live without love. The hotel bill at Windermere had been the principal grounds for the decree nisi. Mr. Harper maintained that Dr. Bone had been in actual attendance on Mrs. Ward and her family from September, 1930, until one day before the elopement.

Dr. Bone, called on his own behalf, confirmed the dates given by Mr. Harper, and pointed out that in the Fen country where he had practised, people who lived in a certain district were almost inevitably attended by the doctor of that district. He had never, at any time, been alone with Mrs. Ward at his professional attendances ; her nurse-companion, and often one of the boys as well, had always accompanied her to his surgery. In 1931 he had made up his mind to get rid of his practice, and had advertised it in June of that year. He had put it in the hands of an agent in September, but being unable at first to get the price he wanted he had engaged at the same agency, in December, a locum to take entire charge until sale, on account of the bad state of his health. The two attendances on one of the Ward boys, which appeared on the patient's card for December, had been made by that locum, and not by him. Long before January he had ceased to attend the Wards or any other patients.

In cross-examination by Mr. Harper, he said that he had been in love with Mrs. Ward since 1916. He had not taken any particular steps to inform Mr. Ward of his decision to cease practice, but everyone in the district knew that he had given up and put the other doctor in charge. This doctor was not a locum tenens ; Dr. Bone had definitely left the place, and that was common knowledge in the district. He could not explain Mr. Ward's statement in the divorce proceedings that he had advised Mrs. Ward to find another doctor.

In reply to questions by the Legal Assessor, he said that the other doctor had carried on the practice until it had been sold in February. He contended emphatically that he had made no kind of arrangement with Mrs. Ward, or spoken any word to her of his feelings, before he had given up his practice, or before

the meeting in Leeds. He had had many opportunities of meeting her socially apart from his professional attendance. Mr. Ward had known him socially ever since 1916, quite apart from the professional attendance he had made at the house. He had been in love with her before he became her medical adviser, but no word had ever been spoken. All the patients of his practice had been transferred to the new doctor, who had been in sole charge of everything. Mr. Ward had never at any time been his patient, and his departure from the district in December, 1931, had been complete; he had never, at any time, gone back to his former home.

Gladys Kate Reading, nurse-companion to Mrs. Ward since 1928, confirmed the statement that Dr. Bone had never been alone with Mrs. Ward in his surgery, and that at home he had always seen her fully dressed in the dining-room, with people coming and going the whole time.

Evelyn Mary Ward confirmed the facts as stated, and said that there had been no misconduct on any occasion whatever until the Windermere episode. In cross-examination, she agreed that they had loved each other for a long time, ever since 1916, but said emphatically that there had been no declaration of any kind until the meeting at Leeds. In reply to the Legal Assessor, she said that she had known that Dr. Bone was ill and unhappy, but he had never said a word of his love, and she did not know that he had had in mind the possibility of a permanent union between them when he gave up his practice. Dr. Bone had not still been her doctor at the time when she had spoken to her husband about the dinner at Leeds.

Mr. Herbert Needes, medical transfer agent, confirmed Dr. Bone's statement that in September, 1931, he had endeavoured to sell his practice, and that in December he had secured a doctor to carry on the practice until the sale, which had been completed in February.

Sir Henry Curtis Bennett, addressing the Council, pointed out that the case was an uncommon one of its kind; it was the result of a statement made by the President of the Divorce Court under a misapprehension. There was not one iota of evidence that at the material time Dr. Bone was the medical attendant of Mrs. Ward. The only allegation in the Divorce Court—apart from the general phrases used in every divorce proceedings—was of misconduct at Windermere from Feb. 2nd–7th, and by that time Dr. Bone had left his practice for good. Moreover, the husband had no complaint whatever to make before the Council as to professional misconduct.

After deliberation in camera, the President announced that the Council had not found the facts proved to their satisfaction.

The Case of Francis Walton, registered as of 105, Downs-road, Clapton, London, E.5, M.B., Ch.B. 1917, U. Leeds, who had been summoned to appear before the Council on the following charge:—

"That being a registered medical practitioner you abused your position by committing adultery with Lilian Lucy King, a married woman, who and whose husband were patients of yours, of which adultery you were found guilty by the decree of the Probate, Divorce and Admiralty Division (Divorce) of the High Court of Justice, dated Feb. 13th, 1933, in the case of King *v.* King and Walton, in which you were the co-respondent. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

Dr. Walton appeared in answer to his notice, and was accompanied by Mr. T. Carthew, counsel, instructed by Messrs. Le Brasseur and Oakley, solicitors, acting for the London and Counties Medical Protection Society.

Mr. Harper said that there was no complainant in this case and he had no witnesses. He put in as evidence a copy of the Divorce Court decree, and read extracts from the shorthand notes of the proceedings in that Court. Mr. King, he said, was a bus conductor who had married in 1921. In July, 1929, Dr. Walton had taken a house and advertised for a caretaker. His wife had brought the Kings along, and the house had been let to them, the front ground-floor room being reserved for a surgery. In November, 1929, Mr. King had found that Dr. Walton had given his wife an expensive present. Soon after that Mr. and later Mrs. King had become panel patients of Dr. Walton, and in December Mr. King had fallen ill and had been got into hospital by Dr. Walton for an operation. In April, 1930, the Kings had moved from Dr. Walton's house to other accommodation. In July, 1930, Mrs. King had left home and eloped with Dr. Walton. Mr. King had sued in the Divorce Court as a poor person, and the doctor had consented to damages of £200. Mr. Harper said he had tried to get Mr. King to come as a witness but had failed.

Mr. Carthew urged that the onus of proving the case must be on Mr. Harper, and that the matter could not proceed until he had discharged that onus, an onus which could not be adequately discharged until counsel for the respondent had been given the opportunity of exercising the usual and undoubted right of cross-examining the principal witness for the other side. The Legal Assessor, in reply, said that the Council had no power to compel witnesses, and had to act on whatever evidence it could obtain. It had before it the shorthand note from the Divorce Court, and amongst the facts proved there was a statement of professional relationship.

Dr. Walton, giving evidence, confirmed the facts about the house as set out by Mr. Harper. The Kings had first agreed to pay £1 in rent, but later this had been reduced to 10*s.* 6*d.*, on the understanding that Mrs. King should do certain services for the surgery. He had never attended Mr. King professionally until the end of 1929. In September, 1929, he had accepted him on his panel, but of course no payment would be received in respect of him until January, 1930. Mrs. King had never at any time been his patient. The children of the two families had played together, and he had occasionally visited the Kings' part of the house socially, but never professionally. He admitted an act of intimacy in November, 1929; this had been confessed both to Mr. King and to Mrs. Walton at that time. In December Mr. King had complained of a gastric complaint, and respondent had sent him to hospital, acting as a friend. When the Kings had left the house Mr. King had transferred off the panel. The "expensive present" had been a guinea hand-bag which he had given Mrs. King for certain services she had done for him in connexion with patients.

In reply to the Legal Assessor, he agreed that the hospital letter produced was that ordinarily sent by a specialist to a general practitioner, remitting a case.

Mr. Carthew, addressing the Council, maintained that the admission of a patient to the panel list did not in itself initiate a professional relationship. The acquaintance did not arise in this instance from any professional relationship whatever, and respondent had asserted that Mrs. King had never at any time been his patient; to this there had been neither cross-examination nor contradiction. Mr. King had known of the act of misconduct before his illness in December. This was not a case of professional trust betrayed.

After consideration in camera, the President announced that the Council had not found the facts proved.

CONVICTIONS FOR DRUNKENNESS

The Case of Peter John Grimes, registered as of 167, Wigan-road, Ashton-in-Makerfield, Lancs, M.B., B.Ch. 1919, N.U. Irel., who had been summoned to appear before the Council on the following charge :—

"That you were convicted of the following misdemeanours' viz.: At the Wigan County Police-court: (1) On Nov. 2nd' 1931, of driving a motor-car whilst under the influence of drink, and were fined £5 and £2 12*s*. 6*d*. costs and driving licence suspended for three months. (2) On March 21st, 1932: (*a*) of being in charge of a motor-car whilst under the influence of drink, and were fined £14 13*s*. 3*d*. and £5 6*s*. 9*d*. costs; (*b*) of being in charge of a motor-car without a rear light, and were fined 10*s*.; (*c*) of being in charge of a motor-car without two front lights, and were fined 10*s*.

"At Dewsbury, West Riding, Petty Sessions: (3) On March 13th, 1933: (*a*) of driving a motor-car in a manner dangerous to the public, and were fined £10 and £5 6*s*. 6*d*. costs or two months' imprisonment; (*b*) of driving a motor-car whilst under the influence of drink, and were fined £30 or three months' imprisonment and driving licence suspended for two years; (*c*) of driving a motor-car without a licence, and were fined £10 or two months' imprisonment; (*d*) of driving a motor-car without being in possession of a certificate of insurance in respect of third party risks, and were fined £10 or two months' imprisonment."

When the case was called Mr. Grimes was not present, and Mr. Harper read a letter from him saying that he intended to be present if possible but his wife was very ill; and also a letter from Mrs. Grimes begging the Council to give him kindly and sympathetic consideration for the sake of herself and her six children, all under seven. Later in the afternoon Mr. Grimes appeared and explained that he had misunderstood the time for which he was called. He admitted the justice of the first two convictions, but said that on the third occasion he had had influenza and had been sleeping badly, but had only taken two small whiskies. He expressed his regret, and the Council, after deliberation, decided to postpone judgment until the May session of 1934.

TWO ERASURES

The Case of Wilfred Edwyne Knight, registered as of c/o Standard Bank, West-street, Durban, Natal, S.A., L.R.C.P. & S. Edin. 1902, L.R.F.P.S. Glasg. 1902, M.B., Ch.B. 1902, U. Edin., who had been summoned to appear before the Council on the following charge :—

"That being a registered medical practitioner you committed in one case the crime of culpable homicide and in six other cases the crime of procuring abortion, in respect of which you were on or about June 8th, 1932, convicted after trial lasting from May 18th, 1932, in the Supreme Court of South Africa (Natal Provincial Division) and were sentenced, in respect of the charge of culpable homicide, to one year's imprisonment with hard labour, and, in respect of each of the six charges of procuring abortion, to three months' imprisonment with hard labour, or two and a half years altogether. And that in relation thereto you have been guilty of infamous conduct in a professional respect."

The President explained that the Council had to inquire into the charges in this case because the Medical Acts did not allow erasure on conviction alone, except for convictions in the United Kingdom. Mr. Harper read a cablegram asking for a postponement, but the Council did not see fit to grant the request. Mr. Harper put in as evidence the certified copies of the conviction and the shorthand notes of the trial and, after consideration in camera, the President announced that the Council had directed the Registrar to erase Mr. Knight's name from the register.

The Case of Austin Threlfall Nankivell, registered as of Public Health Offices, Stonehouse, Devon, M.R.C.S. Eng. 1907, L. 1907, M. 1926, R.C.P. Lond., M.B., B.S. 1908, M.D. (State Med.) 1910, U. Lond., D.P.H. Camb. 1910, who had been summoned to appear before the Council on a charge for which he was convicted at the Devon Assizes in November. Dr. Nankivell was not present and was not represented. The Council ordered the erasure of his name from the register.

Committee Work

DENTAL CURRICULUM

The Council discussed the new recommendations put forward by the Dental Education and Examination Committee for improving the dental curriculum. They were drawn up after the committee had received the reports of the deputy visitors to the examinations, and have been approved by most of the licensing bodies. One of the most important suggestions is to increase the post-registration period of study by six months or a year. Another is that the courses be "specially adapted for students in dentistry"; some of the bodies pointed out that this suggestion may be difficult to carry out, but the committee consider it of paramount importance. As the President pointed out, the dental student is regarded as the Cinderella in the medical school, and it is highly desirable that he should have his own course of training. The Council approved the recommendations.

THE NEW PHARMACOPŒIA

Sir Henry Dale, chairman of the Pharmacopœia Committee, said that nearly 30,000 copies of the British Pharmacopœia, 1932, had been sold, and that 5000 more copies were to be printed, containing corrigenda by the Commission. The statutory provision by which a revised Pharmacopœia comes into force on the day after its publication had, he explained, caused much inconvenience to manufacturers and pharmacists, who are responsible for carrying out new regulations without having reasonable facilities for ascertaining what they are, as copies are exhibited only and are not available for purchase. The committee had therefore suggested, he said, that the Privy Council should be asked to draft a Bill amending the Medical Act to allow the General Medical Council to fix a date after publication on which future editions of the British Pharmacopœia shall become operative. The Pharmacopœia Commission's report to the committee showed that the new Pharmacopœia has been received favourably in all parts of the world. The Commission, realising that work must be continuous between editions, has submitted a scheme including provision for collecting and abstracting scientific literature and research into pharmaceutical and medical problems. The new membership of the Commission will include Prof. O. L. V. de Wesselow, Dr. Donald Hunter, Mr. Percival Hartley, D.Sc., and Mr. Bernard Howard. The committee is taking over from the Dental Board two rooms at 44, Hallam-street, for conversion into laboratories.

PUBLIC HEALTH DIPLOMA: RECIPROCITY WITH SOUTH AFRICA

The Medical Act, 1886, lays down (Section 21) that the Council may register diplomas of public health granted by bodies in the United Kingdom. In certain appointments under the Colonial Office promotion and increase of emolument may be claimed by officers who possess registered diplomas in public health. The holder of a South African diploma

could not, until recently, make a successful claim for such a qualification is not registrable. This position has caused some discontent in South Africa, but the Colonial Office has intimated that it will in future accept the diplomas of universities in that dominion as ground for a claim to advancement. Nevertheless, the situation needs to be regularised, and the Council will consider in November legal advice on the best form of amendment to bring Section 21 up to date.

INSTRUCTION IN TUBERCULOSIS

The Education Committee has received a suggestion that students should receive instruction in tuberculosis at sanatoria instead of in general hospitals. Strong opinions were expressed in the Council against any such innovation. Mr. H. L. Eason said that cases of tuberculosis were received in general hospitals, and that students would be better able to learn its differential diagnosis there than in special institutions where the diagnosis was established before the student saw the patient. Mr. L. P. Gamgee suggested that the establishment of venereal disease departments in general hospitals had done harm by introducing the student to an already diagnosed condition. The Council agreed to ask the licensing bodies if they were satisfied that their candidates for final qualifying examinations had had sufficient opportunity to study tuberculosis in its early stages, and had received adequate instruction in its differential diagnosis.

PRE-MEDICAL STUDY

The Education and Examination Committees reported jointly on the replies from the licensing bodies to the Examination Committee's report on the pre-registration examination. That committee held strongly that students should know something about chemistry and physics before they entered on the medical curriculum; that during the first year they should have further instruction and examination in these subjects in relation to medicine, and that the courses in the curriculum should be adapted to the special needs of the medical student and coördinated with the teaching in the later stages of the curriculum. After a lengthy debate in which the consensus of opinion recognised the growing importance of these subjects, and especially of bringing their teaching into closer relation with that of medicine generally, the Council directed the Education Committee to redraft the appropriate resolutions substantially in accordance with the opinions it had expressed.

GERMAN JEWISH STUDENTS

At a meeting of the Executive Committee preceding the Council meeting consideration was given to a letter, dated May 2nd, from the Jewish Medical Emergency Association signed by Dr. W. D. Eder, chairman of the Association, Prof. Samson Wright, and Dr. H. Gainsborough, asking that some relaxation of regulations, compatible with the maintenance of the standard of medical education, might be shown by the examining bodies to German medical men whose position had been rendered impossible by the anti-Semitic policy of the present German Government, and who, unable to carry on their practice or studies in their native land, were being driven abroad. At present the examining bodies required from those holding a German M.D. degree, who desired to qualify here, firstly that they should take the anatomy and physiology examination, and then, after one year's clinical study, the final examination. The period of clinical study required had just been raised to two years. Students who, though they had passed all their medical examinations, had not completed the final clinical year necessary to obtain the licence to practise, were, under present regulations, compelled to start their studies completely anew. The letter stressed the hardships that strict enforcement of these regulations would entail. In reply, the committee stated that the granting of their qualifications was a matter for the licensing bodies, and, provided the resolutions of the Council in regard to the medical curriculum were adhered to, and, provided the qualification was not granted after a curriculum and examinations of a lower standard than was required in this country, there were no grounds for independent action on the part of the Council.

At the same meeting the Registrar reported that the following names had been restored to the Register, from which they had been erased under Section 14 of the Medical Act, 1858:—

Alfred H. Boon, Norman Davis, Manoel P. dos Santos Emerich Hacker, John Hetherington, Arthur Hines, Edward P. Johnson, James D. Johnson, Owen R. Jones (S.), Prag Nath Kapur, William M. Kerr (S.), Manmohan N. Khanna (Col.), Solomon Lawlor (I.), Flora M. Macdonald (S.), Frank M. Longson, Benjamin A. Meyer (S.), John Precope, Gerald Stonehill, and Charles Wood (S.).

EUGENICS IN GERMANY

THE QUESTION OF VOLUNTARY STERILISATION

How close is the attention now being paid to the practical side of eugenics in Germany is shown by an article by Dr. L. Vellguth in the *Aerztliche Mitteilungen* for May 20th. This journal is published by the Union of Doctors of Germany (Hartmannbund) and has a circulation of 43,000 copies. Dr. Vellguth begins by remarking that the surgical sterilisation of the "ballast" members of the community is rightly considered to be the most important means of racial hygiene on the negative side. He defines "ballast" as the section of the population which is unable, either economically or culturally, to create its own values and which merely consumes the values created by others; and in this grouping he includes the following seven categories: (1) the weak-minded, (2) the mentally ill, (3) the epileptic, (4) the unsocial (criminal), (5) the deaf-mutes, (6) the physical weaklings (tuberculous), and (7) foreign races. To category seven he remarks: "We wish as far as possible to hinder the infiltration of foreign blood into the organism of our nation; Jews, Negroes, Mongols, and similar peoples could therefore with their consent be legally sterilised whether they are healthy or ill."

Dr. Vellguth develops thus his argument for the sterilisation on a large scale (*quantitativ*) of the less valuable members of the community, remarking—

"The law then must have two fronts. A clear line must be drawn between the ballast-folk whose sterilisation is permissible and the folk whose sterilisation is a crime worthy of the whole rigour of the law. We know to-day that the healthy germ plasm means more for the life of people than does the individual human being. The healthy stock of our people is in the greatest danger. To decrease it still further is a deadly sin against the people. When the most valuable stock of men on the earth has once died out, the creator will not make it a second time."

There follows a draft of a proposed law according

to the first clause of which a person may with his consent be sterilised by operation:

(1) If, when the time comes to leave school, he has not reached elementary school standard.

(2) If he has been more than a year, or repeatedly, in an asylum on account of mental disease. In schizophrenia or manic-depressive psychosis the sterilisation also of his parents, sibs, and offspring is permissible.

(3) If he has required institutional treatment for epilepsy.

(4) If he has been declared permanently invalid within the meaning of the State Insurance Act.

(5) If he suffers from hereditary deaf-and-dumbness. In this case his parents, sibs, and offspring may also be sterilised.

(6) If he is dependent on public assistance to a degree to be determined by the Minister of the Interior.

(7) If on account of crime he has been sentenced to imprisonment of at least a year or repeatedly sentenced to shorter terms.

(8) If he has been acquitted on a criminal charge as irresponsible for his actions.

(9) If on account of tuberculosis he has spent a year in a sanatorium or a shorter time repeatedly.

(10) If a commission of three eugenically minded doctors, one of them an official, recognises the danger of severe harm to possible offspring.

Clause 2 of the draft Bill gives this commission discretion to forbid sterilisation in particular cases. Clause 3 leaves it to the Minister of the Interior to determine the selection and method, and to the Ministers of Justice and Finance to determine what advantages can be offered to the sterilised person. There is, be it noted, under the items of Clause 1, no specific mention of foreign races, although the intention may be to cover them in the general and rather obscure wording of item 10.

The argument proceeds: If such a law were passed, how is consent to be obtained?—for the proposal is that the sterilisation shall be voluntary. The Act of 1932 insisted that the consent should itself be given on eugenic grounds; but Dr. Vellguth does not regard this as necessary or desirable. For instance, a weak-minded girl with three illegitimate children would gladly be rid of the trouble of having more. Sterilisation, he says, must somehow be made attractive, and emphasis should be laid on the fact that it does not show, that it brings advantage, and has nothing to do with punishment. Earlier release from asylum or prison would be offered or in other cases a premium or pension. For people of foreign races he suggests the decision to be sterilised might be made easier by a not too small premium.

Further, Dr. Vellguth does not consider only the negative side of racial hygiene. He regrets that under the influence of national sickness and invalidity insurance "our people has lost its pride in health." The aim must be to popularise the notion that those who are attacked by disease do not belong to the constructive forces in the people; those who are mentally and physically sound must learn again to take a pride in the thought that they are called to contribute by their offspring to the restoration of their people. He reprobates the practice, more prevalent than is generally admitted, of sterilisation of the healthy from motives other than eugenic and ends with the slogan:

"You who carry healthy germ plasm in you, know you that it belongs not to you but to your German people! Make no mistake about that!"

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE TEMPORARY ECONOMIES BILL

IT would seem as if the representations made to the Minister for Local Government and Public Health a few weeks ago have had some good effect in safeguarding the interests of dispensary doctors, if not of other medical officers likely to be affected by the Public Services (Temporary Economies) Bill. Last week, during the committee stage of the Bill in the Dáil, the Minister for Finance carried an amendment which will empower him, in cases in which the nominal salary includes reimbursement for expenses, to apportion the part of the salary properly attributable to expenses, and such part will be exempt from the provisions of the Bill. This amendment appears to cover the case of dispensary medical officers, whose salaries are comprehensive of their travelling expenses. Probably half the nominal salary would be properly attributable to such expenses, and if this is made exempt, the true salary will then fall below the level at which it is intended to apply the "cuts." Unfortunately, no concession has been promised in the case of whole-time medical officers, and it seems likely that they will be subjected to deductions on the same scale as lay civil servants.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. J. Wylie to *Victory*, for R.N.B., Portsmouth.
Surg. Lt. H. J. Bennett to *Pembroke*, for R.N.B., Chatham; and F. W. Chippindale to *Penzance*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. H. O'Connor to be Surg. Lt.-Comdr.
Surg. Sub-Lt. S. I. Ballard to be Surg. Lt.
The following appointments are notified: Surg. Lt.-Comdrs. H. Winstanley to *Excellent*, and R. L. Stubbs, G. McCoull, R. Wear, and C. C. Elliott to *Sutton*.
Surg. Lts. G. A. Mason and T. A. Brand to *Sutton*.

ROYAL ARMY MEDICAL CORPS

Maj. F. G. L. Dawson retires, receiving a gratuity.
The undermentioned Lts. to be Capts.: E. J. Curran and T. M. Corcoran.
P. O'Shea is granted a temp. commn. in the rank of Lt.

RESERVE OF OFFICERS

Lt.-Col. R. H. L. Cordner, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

INDIAN MEDICAL SERVICE

Maj. M. Murphy retires.

DEATHS IN THE SERVICES

Colonel Harold Hugh Norman, R.A.M.C. (retd.), who, together with his wife, was among the unfortunate victims of the railway accident at Raynes Park, near Wimbledon, on May 25th, was 58 years of age. He received his medical education at Trinity College and at the Rotunda, Dublin, and in 1898 graduated at Dublin University in medicine and surgery. In the following year he joined the Royal Army Medical Corps, and subsequently served in the South African War, taking part in operations in the Transvaal and in Cape Colony (Queen's medal with three clasps, and King's medal with two clasps). In the late European war, when he became brevet-colonel, he served in Mesopotamia and was awarded the C.B.E. Three children, a boy aged 12, and two girls aged 9 and 7 respectively, are left to mourn the loss of their parents.

PRINCESS LOUISE KENSINGTON HOSPITAL FOR CHILDREN.—Princess Louise, Duchess of Argyll, presided at the annual meeting of this hospital last week. It was stated that out of a population of 180,000 served by the institution only 1400 subscribed to it.

CORRESPONDENCE

IRON TREATMENT FOR MOTHERS AND BABIES

To the Editor of THE LANCET

SIR,—I read with interest in your issue of May 6th (p. 976) the annotation on the valuable article by M. B. Strauss, proving the correlation between iron deficiency in the pregnant woman and nutritional anæmia in her infant. Experimental work done on animals suggested that antenatal iron deficiency would increase the susceptibility of the infant to nutritional anæmia, but up to now this had not been satisfactorily demonstrated in the human mother. The difficulties of such work are great, involving, as it does, the close coöperation of a number of persons, as well as the supervision and control by the investigator of individual mothers and infants over a period of 15 months and more. In 1929–30, when working on anæmia in babies, we attempted a similar investigation, but our results were inconclusive, so that I am perhaps better able than most to appreciate the difficulties which Strauss has so successfully overcome.

There is one remark, however, in your interesting abstract which I should like to supplement. You say that I give the normal hæmoglobin level at 12 months old as 8·97 g. hæmoglobin per 100 c.cm. of blood (65 per cent. on the Haldane standard); whereas I should like to emphasise that this was not the normal but our *average* figure for artificially fed infants. Moreover these infants suffered from a degree of anæmia sufficient to double their morbidity-rate as compared with that of similar infants given iron. Strauss's babies were breast-fed till 4 to 6 months old, and our average figure at 12 months old for babies who had been breast-fed, and were therefore comparable with Strauss's, was 69 per cent. hæmoglobin. Actually this figure we now consider should be corrected to 74 per cent. (10·21 g. hæmoglobin per 100 c.cm.), because our Haldane hæmoglobinometer standard was subsequently found to give readings which were too low (see the June issue of the *Archives of Disease in Childhood* which is now in the press). When this correction is allowed for, our figures for the average hæmoglobin in breast-fed babies will be found to be only a little below the average obtained by Strauss, namely, 10·47 g. hæmoglobin, for breast-fed babies of mothers whose hæmoglobin during pregnancy was over 79 per cent. on the Haldane standard. With direct iron treatment of the baby his hæmoglobin can generally be raised to about 86 per cent. (our corrected figure), or 11·86 g. hæmoglobin per 100 c.cm., and this figure we regard as representing the *normal hæmoglobin level for babies of one year old.*

In spite of Strauss's valuable work, in my opinion iron treatment of the pregnant mother should not exclude or supersede direct iron treatment of the child on account of the many uncertainties attached to medication of the mother. Moreover, it is established that mothers who are not themselves anæmic may yet have babies who develop severe nutritional anæmia. Nor does a history of a good diet for the mother preclude the desirability of direct treatment of the child, for we were able to show that anæmia developed in the babies of women who, at any rate during the later months of pregnancy, were getting a mixed diet which one would have expected to provide an adequate supply of iron. If we bear in mind: (1) Strauss's work, which shows the influence on the infants' hæmoglobin level of maternal iron deficiency; (2) the work of Prof. Davidson and his colleagues in Aberdeen, which showed that approximately 50 per cent. of the working-class women in his series suffered from a nutritional anæmia which could be cured by giving iron; and (3) our work, which showed the prevalence of anæmia among babies and their consequently increased susceptibility to infections, the urgent need for tackling this widespread iron deficiency becomes obvious.

If the morbidity-rate in babies with slight grades of anæmia is double that of iron treated babies, what about the morbidity-rate in anæmic mothers? Is it not probable that the maternal morbidity and mortality-rate, of which we hear so much nowadays, could be materially lowered by greater attention to the dietetic needs of the mother, including her need for iron? In London it is easy to get for the working-class mother, if she will coöperate, excellent antenatal supervision from the strictly obstetrical standpoint, but for a variety of reasons it is difficult to get any systematic and continued treatment of her general health, either antenatally or postnatally. From impressions gained in the out-patient department of the Queen's Hospital for Children, I personally have no doubt that the health of East End mothers is worse now than a year or two back, although, since my work is confined to children, I cannot substantiate this statement by any figures. Those of us who work in such hospitals are well aware that in times of stringency the mother is always the first to go short of the essentials of an adequate diet. In Aberdeen it has been statistically established that between 1927 and the present time the diet of working-class families has seriously deteriorated, and the striking improvement in the health and general well-being of anæmic women given iron was also noted, though unfortunately iron deficiency was far from being the only serious defect revealed in their diet.

The moral of all this is, I submit, that systematic iron treatment on a large scale is greatly needed both for mothers and babies. Treatment of either alone is not enough. Iron and ammonium citrate provides a cheap and efficient medicament for both, and when given properly and regularly it can be relied on to raise the general level of health of both mother and child.

I am, Sir, yours faithfully,

H. M. M. MACKAY.

John-street, Gray's Inn, W.C., May 28th, 1933.

PSYCHOTHERAPY IN GENERAL PRACTICE

To the Editor of THE LANCET

SIR,—Your report (p. 1149) on the psychotherapy inquiry by a court of referees under the Insurance Acts makes interesting reading. As regards the medical qualifications necessary there are apparently:

1. Those who think psychotherapy a purely specialist affair, not to be treated by the general practitioner.

2. Experts who uphold this view, forgetting that *they* began psychotherapy without proper tuition and experience.

3. Experts who think that a general practitioner should only be allowed to practise psychotherapy after tuition by experts. Is there no elementary psychotherapy? As was the case with many now expert, intense interest in the subject is a sufficient beginning for any man with general knowledge of his profession. He can be trusted to seek himself the necessary stores of knowledge. From the first, psychotherapy need never be harmfully given. Besides, a territorial practitioner, far more than

the expert protected by hospital and distance, feels the necessity of extreme prudence in his choice of cases lest his practice suffer irretrievably.

4. Those who boast they already "unknowingly" (!) practise psychotherapy and that "there isn't much in that specialty anyway." Cannot these "unknowing" ones speak of what they know?

Psychotherapy must be learned from patients and by those who have a liking for the work. A psychotherapist need not be a neurologist. Why demand this? Why not demand a heart specialist, an abdominal specialist, an orthopædic specialist? Are not these specialists to be found in abundance for a preliminary opinion if the case is obscure? It is more important that the psychotherapist should not be a specialist in psychotherapy. Further, does anyone need tuition in psycho-analysis to begin practising psychotherapy? A knowledge of psycho-analytic theory may be a positive hindrance to the doctor by blinding him to the simplicity and variability of motives in patients, and by exciting interest in the wrong direction. One can summarise psycho-analysis by saying that its exponents have proved that behaviour and bodily function are partly conditioned by past and present reactions to environment; that typical cases are misleadingly described in books on the subject; and that dreams have a meaning which can be determined when, if ever, necessary. Do not our experts include many who have ploughed through every bog and followed every will o' the wisp, many who would gladly forget much that they have written? To become expert may take years of experience: it is unnecessary to have a lot of the experience our experts have had. A useful psychotherapy is really much easier to learn than that.

A first choice of patient is also not very difficult. Those patients whose symptoms in whole or in part are pathognomonic of emotional disturbance are, generally speaking, suitable for some degree of psychotherapy. The expert's writings may help by making clearer the recognition of emotional symptoms, but the treatment need not be left to him. Beginners may be more successful in certain cases than the expert overladen with theories.

Then as regards the scope of the Insurance Acts: can anyone suppose that the majority of doctors will give to individual patients hours of their time for the few shillings per annum they are allowed? Cases which can be cured in one or a few sittings, those which appeal to one's sympathies, or have educational interest for the doctor, might be treated free, but no doctor can afford to do a very great deal for nothing. The result of non-payment of fees will be that the majority of panel patients will go untreated. Why not leave the doctor and the patient to settle it between themselves? The patient who requires psychotherapy often seeks it or welcomes it; it is easy for him to realise after treatment whether he is indebted to the doctor or not; the fees obtainable from panel patients will not be in proportion to the doctor's time and trouble; and no doctor can thrive on a succession of wrong diagnoses, obvious failures, and unnecessary treatments.

If bureaucracy cannot believe that panel doctors and patients have either sense or principle, could R.M.O.'s be found with the proper sympathies and qualifications to make a minimum inquisition in given cases and pass reasonable payments?

I am, Sir, yours faithfully,

W. THOMSON BROWN, M.B.

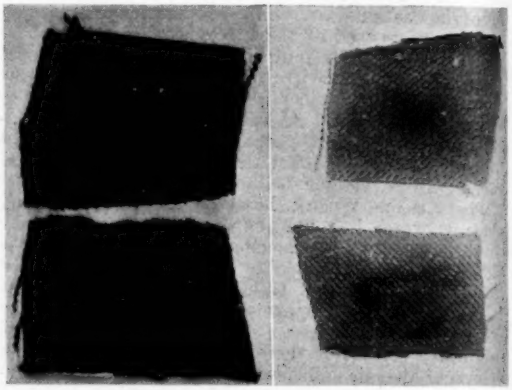
Brisbane-road, Ilford, May 28th, 1933.

INFRA-RED RAYS IN CRIMINAL INVESTIGATION

To the Editor of THE LANCET

SIR,—In your last issue (p. 1113) Prof. D. M. Blair and Dr. F. Davies write of the help given by infra-red photography in differentiating ganglion cells. The same is likely to be true in criminal investigation. Much work has been done by various investigators on the property which ultra-violet rays have of rendering visible stains on articles sent for examination, such stains being quite invisible to the eye. The same property is found in the invisible rays at the opposite end of the spectrum. Fig. 1 is a photograph

FIG. 1 FIG. 2



taken in ordinary daylight with a panchromatic plate of two pieces of cloth, upon which no evidence of a stain was visible to the naked eye. Fig. 2 is a photograph of the same pieces of cloth, taken with an infra-red plate, the source of illumination being an ordinary bowl-shaped electric radiator. This indicates clearly the presence of staining. This method of examining for stains opens up a new field for the criminal investigator, the importance of which is greatly enhanced by the fact that the "production" under examination is in no way altered or damaged. I am indebted to Prof. Glaister of this University for permission to use the above photographs.

I am, Sir, yours faithfully,

F. W. MARTIN.

Forensic Medicine Department, The University, Glasgow, May 26th, 1933.

DOCTORS AND DENTISTS

To the Editor of THE LANCET

SIR,—As a clinical pathologist who has to deal with systemic infections in which the teeth are often concerned, I have frequently encountered some difficulty in establishing coöperation with the dental surgeon, the absence of which the writer of the letter in your issue of May 27th (p. 1151) so rightly deplores. Some months ago I had the good fortune to open an informal discussion with several eminent dental surgeons on that very point, and views were freely exchanged. I would like, therefore, to define the position as it presents itself to me.

A patient is referred by his doctor on account of some systemic infection—arthritis, anæmia, or what not. A full overhaul is made and specimens collected for any relevant tests. In the mouth, septic pockets, carious teeth, or even frank pyorrhœa may be found. Let us suppose that bacteria, answering laboratory

tests for pathogenicity, are found in the mouth. A report is then sent to the doctor, and via him to the dental surgeon, pointing out that vaccine therapy for the systemic infection will be useless unless all septic foci in the mouth are eradicated, and usually asking for radiograms to detect apical infection. In not a few cases one hears nothing at all from the dentist and nothing is done; in many more the use of a radiogram is deprecated. As though any dental surgeon can hope to exclude apical infection without radiograms taken either by himself or by a pure radiologist!

In such cases, if consultation with the dental surgeon is ineffective, it is often essential in the interests of the patient to refer him to another. On the other hand it is not for the pathologist to dictate to the dentist the required procedures that should be adopted in order to free the mouth of infection. Quite half the patients I see on account of arthritis have had all their teeth extracted some years previously by a dentist on his own initiative and are not better. In such cases either the arthritis may not be of infective origin, or microbes not present in the mouth turn out to be the cause thereof. Consultation would have saved these errors.

The difficulty, therefore, to which your correspondent alludes often arises because consultation cannot be achieved. It is not uncommon to be told *by the patient* that the dental surgeon refuses to be "dictated to" by a pathologist or by a radiogram. I do not, of course, defend the cases referred to in which consultation was not sought. I only mention that it is not uncommonly refused by the dental surgeon.—I am, Sir, yours faithfully,

A. KNYVETT GORDON, M.B.

Bedford-square, W.C., May 29th, 1933.

To the Editor of THE LANCET

SIR,—There is another side to the argument of L.D.S., M.R.C.S., in your issue of to-day. Offending teeth are very common; consultations and radiograms are expensive things. When expense matters, the more risky but direct route is indicated. It is not too much to ask a dentist to remove certain teeth, and any others which he may incriminate, on suspicion, by way of therapeutic test. The evidence may be slender, but the judgment is based upon medical grounds which cannot appeal to every dentist—the type of individual, personal experience of similar cases, trivial localising signs, the absence of foci elsewhere, and the nature of the general malady.

Nor is the radiogram infallible; one now and again meets cases when delays of 18 months and more have resulted from the scepticism of dental surgeons who insist on a definitely positive picture before they extract. Until medicine can deal inexpensively and effectively with incipient dental infection in susceptible cases, early sacrifice of a few teeth seems to be the best way out. If the doctor takes the responsibility, should the dentist demur? "The question is," said Humpty Dumpty, "which is to be master—that's all."

I am, Sir, yours faithfully,

A. R. MCCLURE, M.B., Ch.B.

Wellington, Salop, May 27th, 1933.

MISAPPLICATION OF ARTIFICIAL PNEUMOTHORAX

To the Editor of THE LANCET

SIR,—I fear the report in your last issue of my remarks at the Tuberculosis Association on the discussion of this subject is open to misconstruction, and I shall be glad if you will allow me to make clear what I said. In discussing the early diagnosis of intrathoracic disease, especially pulmonary tuberculosis, from the radiological aspect I pointed out that the interpretation of a chest film and the recognition of the wide limits of the normal demanded a good deal of experience. Lack of this was responsible for a large number of errors in diagnosis, especially in tuberculosis. Such errors were not infrequently responsible for the misapplication of artificial pneumothorax. I also pointed out that there was a grave danger of the general practitioner accepting too rigidly the report of a general radiologist who had no special experience of chest radiology. I further stated that such interpretation was far better in the hands of a chest physician who had a full knowledge of the history and clinical data as well as a specialised knowledge of chest radiology which his work demanded of him, than in the hands of a general radiologist who had no such special experience. I then indicated that so specialised was the subject of chest radiology, that there were few "general" radiologists who had the special experience necessary to enable them to correctly interpret a chest film. The report of a radiologist who is constantly seeing chest cases is of course in a totally different category.

I am, Sir, yours faithfully,

Harley-street, W., May 27th, 1933. PHILIP ELLMAN.

LYMPHATIC GLAND OR LYMPH NODE?

To the Editor of THE LANCET

SIR,—In to-day's issue of THE LANCET I find an articles entitled "Rheumatic Lesions in Lymph Nodes." I asked myself what were "lymph nodes." I could not find any explanation in the latest edition of Starling and was puzzled. Then reading the article, I came to the conclusion that the author meant by this name to designate what we used to know as the "lymphatic glands," so mentioned by Allbutt and Rolleston. If I am right, why change the name—and that without any explanation?

I am, Sir, yours faithfully,

WILLIAM H. KESTEVEN.

Kingston-upon-Thames, May 27th, 1933.

*** Lymphatic gland and lymph node are synonyms; the latter term is in common use in America, the former in this country—until recently at all events. The fourth edition of a well-known surgical text-book published last year in London uses sometimes the one, sometimes the other, without indicating their identity.—ED. L.

THE PRINCESS BEATRICE HOSPITAL.—At the annual meeting of this Earl's Court hospital last week, Lord Carisbrooke, the president, stated that the new building contains 80 beds, and that 1046 in-patients were received last year.

HOSPITALS AND ROAD ACCIDENTS.—Mr. J. H. Whitley, chairman of the Voluntary Hospital (Parliamentary) Committee of King Edward's Fund, last week gave evidence before the Select Committee of the House of Lords which is considering the Road Traffic (Compensation for Accidents) Bill. An amendment which he submitted on behalf of the King's Fund stipulates that a hospital should be paid the expenses reasonably incurred in connexion with an accident, provided that the amount to be paid by the authorised insurer or owner of the vehicle should not exceed £50 for an in-patient or £5 for an out-patient. Mr. Whitley pointed out that they were not asking for a figure to cover the worst cases, but that £50 should take the place of the £25 in the original Act.

THE ANTERIOR PITUITARY LOBE

FRACTIONATION OF ACTIVE PRINCIPLES

By J. B. Collip, Ph.D., D.Sc., M.D., F.R.S.

PROFESSOR OF BIOCHEMISTRY AT MCGILL UNIVERSITY, MONTREAL

Abridged from a communication made at a special meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, held on May 30th, with Dr. E. P. Poulton, the President, in the chair.

I PROPOSE to discuss the results of experimental work relating to the physiology and chemistry of the anterior pituitary gland, carried out during the past few months in the department of biochemistry at McGill University. My collaborators in this work have been Dr. Hans Selye, Mr. D. L. Thomson, Ph.D., and Dr. Evelyn Anderson. The literature on the subject is so extensive that it is impossible to deal with it at all adequately in the course of a lecture. I should like to state therefore at the outset that our own work is built upon and is an extension of the earlier work of H. M. Evans, P. E. Smith, L. Loeb, O. Riddle, and many others.

We have been working rather intensively for the past three years on the general problem of placental hormones. One of these, the prolan of Zondek, we could never definitely recognise as a pituitary hormone, nor could we find substantial evidence for the existence of two prolans in placenta, pregnancy blood, or urine. We chose to call this ovary-stimulating factor the "anterior pituitary-like substance" (A.P.L.), recognising that we were in all probability dealing with a single hormone factor having physiological properties only partially like the true anterior lobe maturity substance. We had felt for a long time that the question of the identity or non-identity of the gonad-stimulating substance derived from human placenta with that occurring in the pituitary gland of animals could be definitely answered, provided that tests of replacement therapy could be carried out on hypophysectomised animals. Experiments of this nature that had already been reported had yielded somewhat contradictory results. Last September, therefore, I invited Dr. H. Selye to undertake the preparation of a large group of hypophysectomised white rats. Using a slight modification of the Smith technique, he soon became highly proficient and in a remarkably short time had made available several hundred animals of various ages. He has no difficulty in carrying out the complete operation in five minutes. The operation is carried out under the binocular microscope. Post-mortem study has been made of large groups of both treated and control hypophysectomised animals to ascertain the completeness of the removal of the gland, and only those animals in which the examination of the sella has revealed no macroscopic evidence of pituitary tissue have been included in our reports. We recognise that completeness of removal can only be established with absolute certainty by serial sectioning of the sella. This we have as yet been unable to do.

The effects of hypophysectomy on the rat include a large degree of atrophic change in the genitals, the suprarenal, and the thyroid glands, and immediate cessation of growth in animals over 50 g. in weight. The A.P.L., purified to a high degree to free it from œstrin, was given to the hypophysectomised animal. The result depends on the age of the animal at the time of operation. In a pre-puberal animal the injection of even massive doses of prolan (A.P.L.) produces no œstral reaction, but the ovaries, although not enlarged, show marked changes when studied microscopically. Pseudocorpora are formed all through the gland, and the reaction to prolan is therefore entirely different from that seen in the normal rat. In post-puberal animals the injection of prolan results in the production of continuous œstrus, which has been observed for as long as six weeks without cessation. No pseudocorpora are formed as a rule, but the existing corpora seem to be well nourished.

A typical Aschheim-Zondek reaction can be produced in a hypophysectomised rat either pre- or post-puberal by giving prolan in combination with an anterior lobe extract which by itself has very little effect; the placental hormone has absolutely no effect on growth. The effect of placental hormone on the male gonad is most remarkable. The degeneration of the seminiferous tubules is not interfered with in the least, but interstitial tissue fills the spaces, side by side with the degenerating process in the germinal epithelium. An apparently normal testis can be produced some time after hypophysectomy by the use of A.P.L. plus an anterior lobe activator. If the extract from pregnancy urine is given to animals 6 to 9 days' old there is no effect; for a typical ovarian response the animal must be about 14 days' old. The ovary of the young animal, treated from 6 days of age, however, shows pseudocorpora as does the hypophysectomised pre-puberal rat treated with prolan. The theory that has been based upon our observations is that the pituitary supplies a complementary substance which must be present for a normal Aschheim-Zondek effect. The pituitary of the very young rat does not supply this substance, so the same prolan effect is produced in them as in the hypophysectomised older rats. By using pituitary implants we can produce practically complete replacement therapy. They prevent the atrophy of the testis, ovary, and suprarenal, and the placental hormone causes only this peculiar interstitial reaction confined to the gonad.

A POTENT GROWTH HORMONE

The large group of hypophysectomised animals which we had available gave a suitable test object to assist us in the purification of anterior lobe extracts. In the purification of any hormone a satisfactory test object is essential, for the problem is to find in which fraction the activity lies. Our first endeavour was further to purify the growth hormone. A chance observation in the process of concentration of a large volume of extract of bovine anterior lobe showed that it suddenly became cloudy, and under low-power magnification it looked as though it contained crystalline needles mixed up with amorphous bodies. Under high power it was seen that the material was not truly crystalline. This material was removed and tested, and to our great surprise proved to have great potency in producing growth in hypophysectomised rats. The chief point of this "Q" extract is that it represents, for the first time, a pituitary extract that is absolutely free of all maturity hormones and of thyrotropic and adrenotropic hormones; it merely introduces growth. In 48 hours after it has been given to hypophysectomised animals a good idea can be formed of the potency of the extract, but a test of a week or ten days is made as a general rule. The growth continues fairly uniformly for some days, and then tends gradually to decrease; this provides a method of assaying the growth hormone. The total organic solids are between one and two milligrammes per gramme of original tissue, and one quarter of a cubic centimetre twice a day produces marked growth,

but results have been obtained with one sixty-fourth of a cubic centimetre.

The metabolism of animals treated with "Q" extract is interesting. In 48 hours the excretion of nitrogen drops very markedly and stays down as long as the extract is given, and the extract therefore probably affects protein as much as calcium metabolism. After hypophysectomy there is a tendency for the calcium balance to become negative and for the bones to become osteoporotic. The extract appears to cause the balance to swing to the positive side, but our data on calcium balances are as yet limited.

THE THYROTROPIC FRACTION

Once the growth hormone is removed from the anterior lobe extract it is an easier matter to purify the thyrotropic extract. We are much prouder of it than of the growth factor. It is freed of prolactin by iso-electric precipitation and further purified by salt precipitation and fractionation by alcohol and acetone. It is possible to get 200 guinea-pig units in one milligramme of total solids; yet this fraction is far from being a pure crystalline substance. In six to nine days it produces hyperplasia of the thyroid of a hypophysectomised rat where the control animal shows definite atrophic change; it will also restore the thyroid of a rat to normal two and a half months after the pituitary gland has been removed. After the maximum effect of the thyrotropic extract has been obtained, in from one to two weeks, the thyroid gland reverts to a less active state and the metabolism tends to return to normal. Work is being done on the result of giving minute quantities of iodine in addition. It is not known whether the substance in the pituitary which regulates the adrenal cortex is identical with that which regulates the thyroid. We feel, however, that there are two factors at work, for we have seen the thyroid restored to normal without any restoration of the suprarenal.

The human placenta yields a hormone fraction which has an effect on the testis and ovary, and when administered in large doses for some weeks it may cause a 300 per cent. enlargement of the pituitary with a marked consequential enlargement of the thyroid—in the female only. The hyperplastic effect on the thyroid caused by placental extract is not produced if the ovaries are removed, so that the effect seems to be produced on the thyroid through the ovary and the pituitary. The weight of the ovary increases with the dosage up to a certain point and then drops again, and the same thing happens to the testis. Pregnancy may take place and the ovaries be perfectly normal.

Time prevents me from dealing with other aspects of the placental hormone, notably the relationship of the pituitary gland to lactation.

At the close of Prof. Collip's address a discussion took place.

Mr. A. S. PARKES, D.Sc., suggested the great importance of a histological test for hypophysectomy. The proportion of interstitial material in the testis, he said, was apt to appear deceptively high when the tubular tissue had atrophied. One of the most interesting uses of hypophysectomised animals would be to substitute the action of the anterior lobe by various means, and finally to produce an animal which would perform all the normal functions of reproduction. The Aschheim-Zondek reaction, complete with blood follicles and luteinised follicles, was never seen in the normal animal, and therefore led very little further towards the actual control of the reproductive processes. Ovulation had been caused in hypophysectomised animals, but not without completely abnormal changes in the ovary.

Dr. W. CRAMER asked whether the increase in weight on administration of the growth factor was due at all to an increase in the size of the long bones. Obesity sometimes followed irradiation of the testis, which affected the posterior as well as the anterior lobe; the effect on the interstitial tissue was a real one.

Mr. W. E. WHITE, Ph.D., quoted the work of Evans, which showed that the effect of anterior lobe extract together with prolan was greater than the sum of the two separate effects. Some dwarf mice supplied by Prof. E. C. Dodds had reached their normal size when treated with pituitary implant; this should be a much more delicate test for the growth hormone than was the use of hypophysectomised rats.

Dr. W. FELDMAN asked whether a relationship existed between the pituitary and the parathyroid which affected the calcium metabolism, and whether the pituitary might be responsible for certain diseases of the bones associated with an abnormal calcium balance.

Sir HENRY DALE asked whether Prof. Collip suggested that the gonadotropic function of the anterior lobe was not a hormone function, but that of an activator for prolan. If so, where did the prolan come from when the Aschheim-Zondek reaction was produced in a non-pregnant animal by a large dose of anterior lobe extract?

Prof. COLLIP replied that work with serial sections of the sella turcica was proceeding. There was little possibility, he said, of passing over an incompletely hypophysectomised rat. The parathyroid function was conspicuously unaffected by hypophysectomy. The evidence showed that the complementary substance as well as the prolan was required for the maturity effect; prolan obtained from the placenta therefore might be identical with that contained in the pituitary, but the complementary substance was never present in placenta or pregnancy urine, but could only be obtained from true anterior lobe tissue. No one could doubt the similarity of certain physiological effects of placental hormone and certain fractions of anterior pituitary, but the final proof of the identity of the active principle in each must be chemical.

OBITUARY

JOHN WILLIAM LEY, F.R.C.S. Eng.

Dr. Ley who died at Newton Abbot on May 16th at the age of 84 years has left his mark on medical practice in Devon. Born at North Molton and educated at the London Hospital, he qualified in 1869 and spent several years in residence at the London and Poplar Hospitals where he gained his knowledge of what sickness means to the poor, and took the F.R.C.S. Eng. More than 50 years ago he returned to Devon to become surgeon at the Newton Cottage Hospital, and was soon elected a member of the board of guardians. At that time there was not a single trained nurse in any of the poor-law institutions in the county, and more than colour for the suspicion that the sick poor were tied down in their beds by "jumpers" so as to reduce the need for attendance. At the Local Government Board inquiry which followed Dr. Ley's allegations it was admitted that the majority of the guardians and all their officers had failed to appreciate the serious

responsibilities resting upon them for the welfare of their charges. Drastic reform followed and under Dr. Ley's stimulus the guardians were pioneers in boarding out the children of the poor-law institutions. He himself did much to brighten the lives of the old people in the workhouses. Long after his sight failed Dr. Ley continued to attend the meetings of the board, up to the time indeed when it was superseded under the 1929 Act. His leisure time was filled up with fishing and writing, his best known book being "A Tale of Britain's Folly."

NORMAN ETHELBERT COOK, M.B. Lond.

Dr. Norman Cook, who died of septicæmia on May 11th in the Church Missionary Society Hospital, at Zaria, Nigeria, had only just passed his 30th year. The son of Dr. J. H. Cook, medical secretary of the Church Missionary Society, and nephew of Sir Albert Cook, senior physician to the C.M.S. hospital at Mengo, Uganda, he was born at Kampala and was educated at Highgate School, where he gained the Evor's prize for the best all-round athlete of his year. He went on to St. Bartholomew's Hospital, where he was distinguished at cricket and fives, and took his medical degree in 1928. He then held the post of house surgeon at the Mildmay Mission Hospital while reading for the D.T.M. & H. In February, 1930, he went out to the Zaria Medical Mission in Northern Nigeria, where he superintended the building of several blocks of the Hampstead Centenary Hospital and a small branch hospital at Maska, Katsina, the Emir of which country is now on a visit to London. At these hospitals the work quadrupled during his term of service; in 1932 there were 441 in-patients and 40,000 visits of out-patients. Last year Dr. Cook married Miss Clarice Capper.

JOHN HARLEY GOUGH, M.D. Durh.

WE regret to announce the death on May 20th of Dr. J. Harley Gough, of Torquay, where he was in practice up to his retirement four years ago. He was an old student and associate of Owens College, Manchester, qualifying M.R.C.S. in 1884 and L.R.C.P. in 1885, and a graduate in science of Victoria University; later he went on to take the F.R.C.S. Edin. and the M.D. Durh. Before settling in Torquay he held a number of resident appointments—at St. Mary's Hospital, Manchester, the Wolverhampton General Hospital, and the Royal Albert Hospital, Devonport. His work in Torquay is well known to all who have followed the recent developments of medicine in that popular town. For more than 30 years he was physician to the Torbay Hospital, and for most of that time physician to the Western Hospital for Incipient Consumption, to the Erith House Institute for Invalid Ladies, and to the Rosehill Hospital for Children. It was largely owing to his influence that Torquay now possesses a new hospital which leaves little to be desired in arrangement, equipment, and efficiency. He was a member and sometime president of the Torquay Medical Society, in which his opinions carried weight. He was a lover of music and a student of archæology and natural history. He leaves a widow and five sons, one of whom is practising at Chichester and another is studying medicine at Cambridge.

PANEL AND CONTRACT PRACTICE

Partnership Obligations

THE panel committee for London on May 23rd considered the ability of a practitioner to carry out his obligations under the Act under certain conditions. This practitioner is in partnership with two others; the firm's list of insured persons approaches 4000, of whom over 1100 are on his list. He was stated to be an invalid taking no active part in the practice but retaining a third share of the profits. Clause 4 (4) of the Terms of Service runs:

> Where the Insurance Committee, after consultation with the Panel Committee, are satisfied that owing to the continued absence or bodily or mental disability of an Insurance Practitioner his obligations under the terms of service are not being adequately carried out, they may with the consent of the Minister give notice to the insured persons on his list that the practitioner is no longer in a position to carry out his obligations under the Terms of Service.

Note the word "adequately." Legal opinion was taken upon the following point. As an insured person is not entitled to demand the personal services of a practitioner upon whose list his name is included when that practitioner is practising in partnership, inasmuch as the partners are entitled to determine who should see the patient, and assuming (as here is stated) that this practitioner is unable to take any active part in the practice, can it be maintained that his obligations to his patients are not being adequately carried out, seeing that his patients were receiving all necessary attention and treatment from his two partners? From the solicitors' reply it appears that the general responsibility of a practitioner for providing adequate treatment to his insured patients applies to:

> (*a*) All persons who have been accepted by him . . .
> (*b*) All persons who have been assigned to him . . .
> (*c*) All persons for whom he may under the terms of the said scheme be required to provide treatment pending their acceptance by or assignment to a practitioner, or to provide treatment in case of accident or sudden emergency.

There would (the solicitors say) be no question that (*a*) and (*b*) are covered by the partnership relationship, but does immunity from personal service extend to (*c*)? They raise the question whether "treatment" mentioned embraces the requirements of "visiting and treating," and they refer to an appeal decision from which it would appear that a "visit falls within the expression 'medical attendance and treatment.'"

The practitioner concerned is not absent from the practice, so that clauses relating to absence do not apply. The total number of insured persons is under 5000, the maximum permitted to two partners without an assistant. There being no evidence or suggestion that insured persons included in the practitioners' list are not receiving adequate attention, the solicitors arrive at the conclusion that as regards such insured persons this practitioner is in a position to carry out his obligation. This leaves the other aspect of the case to be considered—namely, is the inability of the practitioner (if such be the case) to carry out all the obligations mentioned in (*c*), when the failure so to do is probably negligible, sufficient to justify the finding that the obligations are not being "adequately" carried out? In view of the fact that if this practitioner resigned from the panel and nominated one of the partners as his successor the position would be exactly the same as at present, the solicitors' opinion is that it would be difficult to decide that his obligations are not being carried out. They point out that the position becomes altered if one of the partners is away, unless a locum tenens is engaged during such absence, and that the insurance committee have power to refer the case to the medical service subcommittee for investigation. On this advice the panel committee resolved that the practitioner's obligations are being adequately carried out.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Hospitals and the Oil Tax

ON May 24th the House of Commons considered the Finance Bill in Committee. On Clause 6 (Amendments as to duty on hydro-carbon oils) the chairman allowed a general discussion on a series of amendments designed to protect certain industries and other interests from the effect of the new tax. Captain FRASER had an amendment on the Order Paper providing that where any oil, other than light oil, was used as a fuel in any hospital equipped prior to April 25th, 1933, with apparatus especially designed for the use of such oil, the rate of rebate should continue to be 8*d*. per gallon.

Sir WILLIAM DAVISON said in the case of a hospital in his constituency, the cancer hospital, this tax would cost £900 a year. That was a serious sum to a hospital in these days, and he was told that in the case of St. George's Hospital the cost would be £2000 a year. If his memory served him right the hospitals of the country consumed something like 20,000 tons of heavy oil in a year, and therefore this taxation involved additional imposition upon them.

"FACTORY ASPECT" OF HOSPITAL LIFE

Dr. O'DONOVAN said he would like to reinforce the claim put forward by Sir W. Davison that special consideration should be given by the Chancellor of the Exchequer to the hospitals in this time of difficulty. He had no doubt that this new tax had been carefully measured by the experts of the Treasury, but he would be happier in his mind if he knew that the Chancellor of the Exchequer had obtained information from the Ministry of Health as to whether or not this tax would be a hindrance to the proper development of hospitals in England. Apart from the financial aspect, which was a matter for hospital managers, there was an aspect of this question which appealed to the medical profession. The fewer people that were employed about a hospital the greater the attention that could be given by the administrators to the work of the hospital. Where oil fuel was used the administrators were not bothered with the payment and management of and responsibility for those who had to take in and store coal and stoke the furnaces. If that side could be got away from hospital administration the proper work would receive more attention from the committee and administrators. It was obvious that the less smoke they had about the place, the less dust, the more the modern hospital would be a temple of healing and the less would it resemble a modern factory. Hospitals were so big that the problems of heating, lighting, disinfection, and washing almost made the hospital in its lay aspect a miniature factory. If oil fuel was developed more then that factory aspect of hospital life would be diminished to the very great satisfaction of the doctors.

POSSIBILITY OF EXEMPTION

After further debate, Mr. CHAMBERLAIN (Chancellor of the Exchequer) said that the primary purpose of the oil tax was to provide him with an additional source of revenue, and to safeguard the revenue which he already enjoyed. But he did not deny that he also had in mind definitely the protection of a British resource—the greatest natural resource that we had in this country. It was impossible to put on any tax without treading on somebody's corns; it must hurt some people. Evidence which had come to him, however, showed that there was a good deal more likelihood, not only of persons choosing to take coal-using apparatus instead of oil-using apparatus in the future, but of actual conversion from using oil to-day to the other system than he had supposed possible. It appeared that the conversion from the one system to the other was in many cases not a very costly affair. It was his belief, after having heard what had been said that afternoon, that the case for the tax was a good one, that it was calculated, taking the broad national view, to help British industry, and that they had to take care to see that British resources were not dissipated by the competition of foreign supplies, and the Committee would do well to accept the tax as he originally proposed it.

Sir W. DAVISON: Can the right hon. gentleman say whether any exemption would be given to hospitals?

Mr. CHAMBERLAIN said he deliberately did not address himself to the individual cases which had been put up, because he thought the Committee would really see that the general arguments which he used applied to all the individual cases. They would have a further opportunity of discussing those matters on the Report stage, more particularly the specific cases.

Cancer Hospital Bill

In the House of Lords on May 30th the Cancer Hospital (Free) Bill, which has passed through a Select Committee, was read the third time and passed.

Medical Practitioners and Motor Accidents

Lord MOYNIHAN presented a Bill to make provision for the payment of remuneration to registered medical practitioners and hospitals for treatment rendered to persons injured in the use of motor vehicles on roads.

The Bill was read a first time.

Essex County Council Bill

The Essex County Council Bill, which contains provisions for the registration of massage and electrical treatment establishments (except those conducted by medical practitioners) was read the third time and passed.

HOUSE OF COMMONS

WEDNESDAY, MAY 24TH

Pensioners and Surgical Boots

Mr. SMEDLEY CROOKE asked the Minister of Pensions the number of surgical boots supplied to pensioners for each of the following years: 1929, 1930, 1931, and 1932.—Major G. C. TRYON replied: The number of surgical boots supplied fluctuates from year to year with the number of pensioners to be supplied, their varying surgical condition and, of course, with the proportion due for renewal under Ministry regulations. The numbers supplied in the years referred to were: in 1929, 16,600; in 1930, 17,100; in 1931, 15,300; and in 1932, 12,600.

Mr. SMEDLEY CROOKE asked the Minister of Pensions the total number of applications for renewal of surgical boots that had been received from pensioners during the past 18 months; the total number of surgical boots supplied; and the number of cases where it was decided that suitable adaptation of ordinary boots would meet the needs of the case.—Major G. C. TRYON replied: I have no record of the total number of applications for the renewal of surgical boots. The number of surgical boots supplied during the 18 months ending March 31st last was 19,459. During the last 12 months of this period (for which alone records have been kept) the number of cases in which ordinary boots were on medical advice adapted to pensioners' requirements was 622.

Opium Revenue in Assam

Sir WALTER SMILES asked the Secretary of State for India whether, in view of the fact that the government of Assam was pledged gradually to eradicate the use of opium in the province, the revenue from that source had shown any progressive decrease during the last few years.—Sir S. HOARE replied: Yes, Sir. The following figures show the net revenue in rupees: For the year 1925, 35,54,870; 1926, 30,82,835; 1927, 30,94,000; 1928, 27,42,425; 1929, 25,55,355; 1930, 22,83,356; 1931, 21,82,601.

THURSDAY, MAY 25TH

Birching as Punishment for Young Persons

Viscountess ASTOR asked the Home Secretary if his attention had been drawn to recent cases where punishments of birching had been inflicted on boys before the expiration

of the statutory period during which the decisions might be appealed against; if he was aware that two boys, aged 12 years each, were ordered at the Southport children's court, on April 13th, to receive six strokes of the birch each, and that the same two boys were on April 19th again ordered six strokes of the birch each for an offence committed before the former one; and whether, in view of these and similar cases, he would introduce a Bill to abolish birching as a punishment for young persons on the lines of the original draft of the Childrens' Bill in 1932.—Sir J. GILMOUR replied: I am not aware of any requirement in law to delay the carrying out of an order of a court of summary jurisdiction for the whipping of a boy, as suggested in the first part of the question. On the contrary, the Summary Jurisdiction Act, 1879, provides that the whipping shall be administered as soon as practicable. My attention has been called to the Southport case, and I am informed by the justices that they only resort to whipping on the rarest occasions and with the utmost reluctance. The answer to the last part of the question is in the negative. My hon. friend will remember that only last year a proposal in the Children and Young Persons Bill to deprive courts of summary jurisdiction of the power to order boys to be whipped was not accepted by Parliament.

Exchequer Contributions to Health Insurance, &c.

Mr. SMEDLEY CROOKE asked the Secretary to the Treasury the amount paid by the Exchequer for the year ended March 31st last to the unemployment insurance (including transitional payments), the national health insurance, the contributory pensions (old age, widows', and orphans'), and the old age non-contributory pensions.—Mr. HORE-BELISHA replied: The amounts paid by the Exchequer for the year ended March 31st, 1933, to the services mentioned by my hon. friend are as follows:—

	£
Unemployment Fund (including transitional payments)	79,400,000
National Health Insurance Fund	6,331,000
Contributory Pensions Scheme	11,000,000
Old Age Pensions (including contributory Old Age Pensions where the recipients are over 70 years of age)	39,710,000

Children and Exhibition of Unsuitable Films

Lord SCONE asked the Secretary of State for Scotland if he was aware that Scottish magistrates had no power to make any regulations, other than safety rules, for the exhibition of kinematograph films, and could not prevent children and young persons from attending films which had been passed by the censor as suitable for adults only; and whether he was prepared to introduce the necessary legislation to enable suitable regulations to be brought into operation.—Mr. SKELTON replied: As my right hon. friend stated in answer to a question addressed to him on March 21st last, he is advised that the legal position in Scotland is as stated in the first part of the question, though he is not aware that the matter has been the subject of judicial decision. As regards the latter part of the question, the subject is at present receiving careful consideration, but he is not in a position to give any undertaking as to legislation.

Water-supply at Denby Dale

Mr. GLOSSOP asked the Minister of Health whether he had considered the protest sent to him from a meeting of ratepayers of the village of Denby Dale protesting against the proposal of the Denby and Cumberworth urban district council to revert to the use of the Square Wood water reservoir, which was the source of the infection of the recent epidemic of typhoid; and whether he was in a position to state his attitude on the matter.—Sir E. HILTON YOUNG replied: I have received this protest, and I will consider it in conjunction with the report of my inspector, who visited the locality yesterday to investigate the matter.

MONDAY, MAY 29TH

Price of Opium in India

Sir WALTER SMILES asked the Secretary of State for India whether, in view of the fact that the price of opium varied from Rs.20 per sen in Mewar to Rs.240 per sen in Pudukkotai, he would take all possible steps to enforce a standard price for opium all over the Indian Empire.—Sir S. HOARE replied: The possibility of taking steps for the equalisation of the selling price of opium in the Indian States with that prevailing in the surrounding districts of British India has engaged the attention of the Government of India for some time past. As my hon. friend is no doubt aware there are divergencies of price in the provinces of British India where its fixation rests with the local governments.

Indian Officials' Pensions

Sir ALFRED KNOX asked the Secretary of State for India whether it was the intention of His Majesty's Government in Great Britain to make themselves responsible in any future constitution for the pensions of the officials and officers of the Indian Civil Service, Indian Army, Indian medical service, forestry, and other departments.—Sir S. HOARE referred the hon. Member to a reply given to a question on this subject on March 7th, 1932.

Sir A. KNOX asked if the right hon. gentleman realised the anxiety which existed in the country on this question, and if it was not possible for the Government of India to pay over sufficient capital to provide for the payment of these pensions.

Sir S. HOARE said that he realised that there was considerable anxiety on this question. It was one of the matters which would have to be considered very fully by the Parliamentary Joint Select Committee.

Reduction of Imports of Milk Products

Brigadier-General CLIFTON BROWN asked the Minister of Agriculture if he could make any statement as to the result of his negotiations with exporting countries with regard to the voluntary reduction of imports of milk products.—Major ELLIOT replied: I have reason to believe that the foreign countries mainly concerned with the export to this market of cream, condensed whole milk, condensed skimmed milk, and milk powder, will agree, as an emergency measure designed to assist the milk industry of this country, to limit their exports of these products to the United Kingdom during the three months June, July, and August next to an amount not exceeding 80 per cent. of the quantities shipped in the corresponding period last year, with a review each month of the market and supply position. Those foreign countries whose exports to this market are comparatively small have been asked to ensure that their shipments remain at previous low levels. I have every hope that the overseas Dominions, whose representatives I have consulted, will use their best endeavours to coöperate with us so far as they are concerned with the export of these products. I have been in touch with the leading manufacturers in this country, and have been assured that, having regard to these arrangements, there will no longer be any question of reducing their output. The position regarding other dairy products continues to receive close attention.

Sanitary Inspector's Qualifications

Mr. PRICE asked the Minister of Health what action he proposed to take with regard to the appointment by the Lutterworth rural district council of an unqualified person to the position of sanitary inspector in contravention of Article 16 of the Sanitary Officers Order, 1926, and the terms of the advertisement; whether he was aware that two fully qualified sanitary inspectors, out of the 80 or more applicants who applied for the position, were interviewed by the council; and that, in the absence of his approval to the appointment, the local authority had accepted an offer by the person appointed to share part of the loss incurred in foregoing their claim to the repayment of half of the officer's salary out of the Exchequer Contribution Account.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend has declined to approve this appointment, but as the local authority are willing to forego their claim to repayment of half the salary out of the county fund, he has no power to prohibit it. He proposes to arrange in due course for an inquiry into the sanitary administration of this district. My right hon. friend has received no information from the local authority in regard to the last two parts of the question, but he understands that the facts are as stated.

National Health Insurance Benefits

Mr. RHYS DAVIES asked the Minister of Health the total amount expended under the National Health Insurance scheme since its inception up to Dec. 31st, 1932, in respect of each of the following benefits: medical, sickness, and disablement, maternity, dental, ophthalmic, and other additional benefits.—Sir E. HILTON YUNG replied: The total amount expended on each of the benefits referred to since the inception of the National Health Insurance scheme up to Dec. 31st, 1932, in England and Wales is approximately as follows:—

Medical benefit	£146,529,000
Sickness benefit	154,101,000
Disablement benefit	65,568,000
Maternity benefit	27,615,000
Dental benefit	14,850,000
Ophthalmic benefit	2,320,000
Other additional benefits*	4,726,000

* Additional benefits given by way of increases in sickness disablement, and maternity benefits are included under those headings.

MEDICAL NEWS

University of Cambridge

The following degrees were conferred:—

M.B. & B.Chir.—G. T. Partridge, F. K. Boston, and J. H. Fisher.

M.B.—J. W. P. Thompson and Ralph Watson.

Society of Apothecaries of London

Mastery of Midwifery.—The following candidates have satisfied the examiners for this diploma:—

Helen M. Jardine, M.B. Aberd.; Elizabeth M. Moore M.B. Belf.; Dorothy M. Satur, M.B. Madras, and N. J Thanavala, M.D. Bombay.

At recent examinations the following candidates were successful:—

Surgery.—J. B. Frumin, Guy's Hosp.; S. Gurevich, Charing Cross Hosp.; R. Hill, Univ. of Camb. and London Hosp.; R. W. J. Scheel, Univ. of Munich and Guy's Hosp.; H. B. Thornton, Guy's Hosp.; and J. A. Van Rooyen, St. Bart.'s Hosp.

Medicine.—E. V. Bevan, Univ. of Camb. and St. Mary's Hosp.; R. Hill, Univ. of Camb. and London Hosp.; L. R. Jain, Univ. of Birmingham; E. O'C. Parsons, Univ. of Sheffield and St. Bart.'s Hosp.; E. Pugh-Jones, Guy's Hosp.; R. W. J. Scheel, Univ. of Munich and Guy's Hosp.; F. H. Williams, Univ. of Sheffield; and I. M. Williams, Royal Colleges, Edinburgh.

Forensic Medicine.—A. H. L. Baker, St. Mary's Hosp.; E. V. Bevan, Univ. of Camb. and St. Mary's Hosp.; E. H. E. Cross, St. Mary's Hosp.; W. H. Ekin, Univ. of Camb. and Westminster Hosp.; J. P. Fitzgerald, Guy's Hosp.; M. S. Hendriks, Meharry Medical College, U.S.A.; R. Hill, Univ. of Camb. and London Hosp.; W. E. Merrick, Howard Univ., U.S.A.; H. J. Ripka, London Hosp.; R. W. J. Scheel, Univ. of Munich and Guy's Hosp.; and R. Sugarman, Univ. of Basle and Royal Free Hosp.

Midwifery.—G. A. Bell, Guy's Hosp.; E. V. Bevan, Univ. of Camb. and St. Mary's Hosp.; W. E. P. Corbett, St. Mary's Hosp.; J. P. Fitzgerald, Guy's Hosp.; R. Hill, Univ. of Camb. and London Hosp.; R. W. J. Scheel, Univ. of Munich and Guy's Hosp.; D. A. Smith, Univ. of Camb. and St. Mary's Hosp.; and G. Wilson, Guy's Hosp.

The following candidates, having completed the final examination, have been granted the Diploma of the Society entitling them to practise medicine, surgery, and midwifery: W. E. P. Corbett, R. W. J. Scheel, R. Hill, J. A. Van Rooyen, E. O'C. Parsons, and I. M. Williams.

National Health Insurance Twenty-first Birthday

A luncheon to celebrate the twenty-first anniversary of the coming into operation of the first National Health Insurance Act is to be held at the Hotel Victoria, London, on Monday, July 17th, when the toast of National Health Insurance will be proposed by Sir Hilton Young and responded to by Mr. Lloyd George.

Federation of Progressive Societies and Individuals

A meeting to commemorate the services of the late Mr. Justice McCardie to the cause of sexual and marriage law reform will be held at the Conway Hall on Thursday, June 15th, at 8 P.M. Chairman: C. E. M. Joad; Speakers: Dr. Edith Summerskill, H. W. Paton, Barrister-at-law; Norman Haire, Ch.M., M.B.; Alec Craig, and others. Tickets can be obtained, price 1s., from the Secretary, F.P.S.I., Room 21, St. Stephen's House, S.W.1. Tel. Whitehall 2408.

London Voluntary Hospitals Committee

The following have been elected members of this committee for 1933–36.

Hospitals with Undergraduate Schools.—Mr. C. E. A. Bedwell; Mr. R. Davies-Colley, F.R.C.S.; Prof. L. S. Dudgeon, F.R.C.P.; Mr. A. G. Elliott; Dr. Geoffrey Evans; Dr. Anthony Feiling; Dr. A. M. H. Gray; Dr. J. M. H. MacLeod; Mr. Robert Milne, F.R.C.S.; Sir Edward Penton; Lord Riddell; Sir Herbert Samuelson; Mr. Austin Taylor; Mr. F. P. Whitbread; and Dr. C. M. Wilson.

Hospitals without Undergraduate Schools.—Major E. A. Attwood; Mr. L. E. Barrington-Ward, F.R.C.S.; Captain A. M. Hughes; Sir Henry Jackson, M.B., M.P.; Mr. E. Vernor Miles; Mr. Gilbert Panter; Mr. D. Denham Pinnock, F.R.C.S.; Dr. Harold Pritchard; and Mr. Cecil Rowntree, F.R.C.S.

Special Hospitals.—Mr. Sam Baer; Mr. J. Bright Banister, F.R.C.S.; Lady Barrett, M.D.; Sir A. Kaye Butterworth; Mr. F. P. Carroll; Mr. O. N. Chadwyck-Healey; Dr. A. Hope Gosse; Mr. J. P. Lockhart-Mummery, F.R.C.S.; Mr. M. S. Mayou, F.R.C.S.; Mr. Arthur Morley, K.C.; Dr. Eric Pritchard; Dr. E. Bellingham-Smith; Mr. T. G. Stevens, F.R.C.S.; Dr. Hugh Thursfield; Mr. J. P. Wetenhall; and Captain R. G. E. Whitney.

At their first meeting, held on May 24th, the committee elected the following officers: Chairman, Lord Riddell; vice-chairman, Mr. O. N. Chadwyck-Healey; hon. treasurer, Mr. E. Vernor Miles; and hon. secretary, Prof. L. S. Dudgeon.

Paddington Medical Society

The annual general meeting of the society will be held at 9 P.M. on Tuesday, June 13th, in the Great Western Royal Hotel, Paddington, when the president, Dr. E. de Swietochowski, will give a valedictory address.

University of London, University College

The new building of the department of Zoology and Comparative Anatomy will be opened by the Chancellor of the University, the Earl of Athlone, on Monday, June 12th, at 3 P.M. Sir John Rose Bradford, chairman of the College committee, will preside at the opening ceremony.

Society for the Provision of Birth Control Clinics

Walworth Women's Welfare Centre.—A lecture on the Theory and Practice of Contraception will be given to medical students by Dr. Gladys M. Cox, on Monday, June 12th, at 6 P.M., at this centre, 153A, East-street, London, S.E.

Congress of Plastic Surgery

Under the auspices of the Société Scientifique Française de Chirurgie Réparatrice, Plastique et Esthetique the first international congress of plastic surgery will be held in Paris on Oct. 13th and 14th at the Institut Océanographique, 195, rue Saint Jacques. The president is Dr. Dartigues and the secretary-general Dr. Claoué, 39, rue Scheffer, Paris, XVI.

East London Child Guidance Clinic

Twelve lectures on the Applied Psychology of Childhood will be given by members of the clinic staff at Toynbee Hall, Commercial-street, London, E., from June 8th–15th. There will be two lectures every day (except Saturday and Sunday) at 3.30 and 5 P.M., and the lecturers will include Dr. Emanuel Miller, Dr. Reuben Levinson, and Dr. P. L. Goitein. Tickets for the course or for single lectures may be had from the lecture secretary at the clinic, Bell-lane, London, E.1.

King Edward's Hospital Fund for London

The annual meeting of this Fund was held at St. James's Palace on May 26th. The Prince of Wales, who presided, read a message stating that the King was glad to hear that the whole of the increased distribution of £300,000 was covered by the income of the year. "I think that we have to record what is little short of a miracle," said the Prince. In spite of the financial crisis the Fund and the voluntary hospitals had had a successful year. By the end of 1931 it had proved possible to increase the ordinary distribution to £275,000. In 1932 the income again reached the same level, and as there was reason to fear that some at least of the hospitals would be suffering seriously from the crisis, it was decided to distribute £300,000. Apart from this the Fund was pledged to increase the pensions grants to the promised maximum of £20,000, but after drawing for 1932 its proper share of the pensions reserve fund, it was found possible to distribute the whole of the increase out of income, with just £111 to spare. On the whole the hospitals had done better than in 1931; and in spite of some weak spots they had again, for the sixth year in succession, come out with a margin on the right side. This successful result was due to their sustained efforts and to steady and continuous support on the part of the public. After referring to the various activities by which the Fund gave them help, the Prince mentioned that the Out-patient Arrangements Committee had begun by taking up the recommendations of the Onslow Committee on two points—standard forms of doctors' letters, and hospital time-tables for out-patients. In the meantime the hospitals themselves were working on the report, and one of the large teaching hospitals, for example, had been making a complete record of the time taken at all the different stages of its out-patient procedure during three weeks.

Referring to the death of Lady Mount Stephen, Mr. E. R. Peacock, the hon. treasurer, said that the late Lord MountStephen, in addition to the very large sums which he contributed to capital, left his residuary estate to the Fund, and as a result the capital would be increased by about £150,000 now and by a further sum when certain annuities ceased. The amount received by the Fund in voluntary contributions had recently averaged £140,000 a year, and if the distribution was to be maintained at its present level they must aim at increasing this amount.

Mr. J. H. Whitley moved a vote of thanks to the Prince of Wales, and Sir Holburt Waring, P.R.C.S., seconded. Among those present were Lord Dawson, P.R.C.P., Sir John Rose Bradford, Sir George Makins, Sir Cuthbert Wallace, Sir William Collins, Sir Louis Greig, Sir Cooper Perry, Mr. H. L. Eason, Mr. V. Warren Low, Prof. Winifred Cullis, D.Sc., Dr. Morley Fletcher, and Dr. Gilbert Orme.

Ladies' Medical Golfing Society

The spring meeting of this society was held on May 25th at Northwood Golf Club. The results were as follows:—The "Canny Ryall" Challenge Cup for the best net return of the meeting: Mrs. Marriage, 88—11=77. Division I.: best scratch score, Miss Pauline Doran, 84. Handicap scores: (1) Miss S. Dudgeon, 95—16=79; (2) Mrs. Gibson, 96—16=80; (3) Mrs. Knowles, 99—18=81. Division II.: best scratch score, Mrs. Sherwill Dawe, 102. Handicap scores: (1) Mrs. Maxwell-Chance, 114—35=79; (2) Mrs. Fletcher, 111—29=82, tied with Mrs. Tilley, 105—23=82. Greensomes: Mrs. Benjafield and Miss Dudgeon tied with Mrs. Mollison and Mrs. Roberts Harris, 2 up.

Society for Constructive Birth Control

A meeting arranged by this society was held at the Queen's Hall, London, on May 25th, with Lord Marley in the chair. Sir William Wayland, M.P., dealt with the economic and political aspect of birth control. He thought it would be of benefit to the nation to reduce the total of the population by 5,000,000. He was followed by Dr. Henry Neilson, who spoke of the pioneer work done in this country by Mrs. Marie Stopes, D.Sc., in founding the first birth control clinic in 1921, and of her institution of demonstrations at the society's clinics at which medical practitioners may gain familiarity with the fitting of various appliances. Dr. Stopes described how one part of the work of clinics is to sift good methods from bad, and Mr. Aylmer Maude drew a contrast between control of population by war, plague, famine, and clandestine abortion, and control by the methods taught at scientific clinics.

Society for Relief of Widows and Orphans of Medical Men

At the annual general meeting, held on May 24th, Mr. V. Warren Low, presiding, it was reported that during the year 1932 a sum of £4954 had been distributed among the 52 widows and 8 orphans in receipt of relief. Included in this was a sum of £451, allotted to orphans to enable them to continue their education or train for a professional or commercial career. Three widows had died during the year: one had received in grants £3100, another £2120, and the third £1100; 5 widows and 2 orphans came on the funds. The number of members at the end of the year was 286. Membership is open to any medical practitioner who at the time of his election is resident within a 20-mile radius of Charing Cross. The annual subscription is £2 2*s*. if the applicant is under 35 years of age at the time of election, £3 3*s*. if under 45, and £4 4*s*. if over 45. The invested funds amount to £140,700, only the income of which may be used for grants. Further particulars from the secretary, at 11, Chandos-street, London, W.1.

Fellowship of Medicine and Post-Graduate Medical Association

The first of four lectures for advanced post-graduates, to be held on Wednesdays from June 7th–28th at the Medical Society of London, 11, Chandos-street, W., at 5 P.M., will be given by Dr. Leonard Findlay, who will speak on Chronic Pulmonary Disease in Childhood. Forthcoming courses include a week-end course in clinical surgery at the Royal Albert Dock Hospital on Saturday and Sunday, June 10th and 11th; an all-day course in diseases of the chest at the City of London Hospital, Victoria Park, from June 12th to 24th; an all-day course in medicine, surgery, and the specialties at the Prince of Wales's Hospital, from June 12th to 24th; a course in antenatal treatment at the Royal Free Hospital, from June 16th to July 7th; a course in cardiology at the National Hospital for Diseases of the Heart, from June 26th to July 8th; and a course in diseases of children at the Children's Clinic, from June 26th to July 8th. Further particulars and syllabuses may be had from the secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

Leverhulme Research Fellowships

The will of the late Lord Leverhulme directed that the income from part of his estate should be utilised for scholarships for research and education. The trustees have recently made grants for this purpose to several institutions, and they have now resolved to devote the sum of £12,000 a year to the establishment of research fellowships. These are intended in the first instance for the assistance of experienced workers, especially men and women who are prevented either by pressure of routine duties or by any other cause from undertaking, or completing, an investigation of value. No definite limit therefore will be placed on the amount of individual grants but their duration will normally not exceed two years, and Fellows will usually be required to work at or in connexion with a recognised centre of research, either at home or abroad. No subject of inquiry is excluded from the scope of the scheme, but the trustees intend that preferential consideration should be given to subjects in which the existing provision is inadequate.

The following have agreed to serve on an advisory committee for the selection of Fellows and for the general supervision of the scheme: Mr. H. J. W. Hetherington (chairman), Prof. A. M. Carr-Saunders, Sir William Hardy, F.R.S., Dr. N. V. Sidgwick, F.R.S., and Mr. H. T. Tizard, F.R.S. Dr. L. Haden Guest has been appointed secretary. Applications (from British-born candidates normally resident in the United Kingdom) and all other communications should be addressed to the secretary, Leverhulme Fellowship Scheme, Union House, St. Martins-le-Grand, London, E.C.1. The advisory committee will meet early in July to consider recommendations for the first awards. They will then be able to deal with applications received up to June 19th.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 20TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 30 (last week 22); scarlet fever, 2030; diphtheria, 752; enteric fever, 35; acute pneumonia (primary or influenzal), 797; puerperal fever, 38; puerperal pyrexia, 110; cerebro-spinal fever, 34; acute poliomyelitis, 2; acute polio-encephalitis, 3; encephalitis lethargica, 8; relapsing fever, 1 (Beverley); dysentery, 6; ophthalmia neonatorum, 82. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 23rd–24th was as follows:—Small-pox, 57 under treatment, 2 under observation (last week 64 and 9 respectively); scarlet fever, 1625; diphtheria, 1617; enteric fever, 12; measles, 416; whooping-cough, 418; puerperal fever, 19 (plus 8 babies); encephalitis lethargica, 232; poliomyelitis, 2; "other diseases," 358. At St. Margaret's Hospital there were 11 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 39 (1) from measles, 11 (3) from scarlet fever, 21 (7) from whooping-cough, 34 (7) from diphtheria, 30 (4) from diarrhœa and enteritis under two years, and 34 (5) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 13 fatal cases of measles, Newcastle-on-Tyne, Sunderland, and Rhondda each 3. Diphtheria was credited with 5 deaths at Liverpool, 2 each at Acton, West Ham, and Huddersfield.

The number of stillbirths notified during the week was 278 (corresponding to a rate of 41 per 1000 total births), including 48 in London.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

WEDNESDAY, June 7th.—11.30 A.M., SURGERY. Provincial Meeting at the Royal Infirmary and General Hospital, Bristol. Dr. A. T. Todd: The Lead Treatment of Cancer. 12.15 P.M., Operations. 12.30 P.M., Cases of Adrenalectomy shown by Mr. C. F. Walters. 12.45 P.M., Pathological Specimens by Mr. A. W. Adams. 1 P.M., Skiagrams by Mr. M. A. Jackman. 2 P.M., Leave for the Bristol General Hospital.

FRIDAY.—5 P.M., OPHTHALMOLOGY. (Cases at 4.30 P.M.) Papers. Mr. Charles Goulden and Mr. H. B. Stallard: Tar Epithelioma of the Lid Margin. Mr. Affleck Greeves: An Operation for Congenital Ptosis. Dr. Roy Ward: Radium in Ophthalmology. Cases. Mr. Affleck Greeves: Unilateral Congenital Ptosis After Operation. Dr. Roy Ward: Mooren's Ulcer. Limbal Tumours. Spring Catarrh. Rodent Ulcers. Squamous Epitheliomata. Recurrent Orbital Tumours which have disappeared after Radium Treatment. Other cases will be shown.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, Cavendish-square, W.

THURSDAY, June 8th.—8.30 P.M. Dr. Crookshank: The Debt of Individual Psychology to Nietzsche.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
THURSDAY, June 8th.—5 P.M., Prof. E. Mellanby: Nutrition and Disease—the Interaction of Clinical and Experimental Investigations. (First Croonian lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, June 5th, to SATURDAY, June 10th.—LONDON LOCK HOSPITAL, Dean-street. Course in Venereal Disease, afternoons and evenings.—ROYAL ALBERT DOCK HOSPITAL, E.16. Week-end Course in Clinical Surgery, all day Sat., and Sun., June 11th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Wed., 5 P.M., Dr. Leonard Findlay: Lecture for advanced post-graduates on Chronic Pulmonary Disease in Childhood. (Illustrated by the lantern.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.
TUESDAY, June 6th.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Operations, Medical Surgical, and Throat, Nose, and Ear Clinics.
WEDNESDAY.—10 A.M., Medical and Children's Wards, Children's Clinic. 2 P.M., Operations, Medical, and Surgical Clinics.
THURSDAY.—10 A.M., Neurological Clinic. 11.30 A.M., Fracture Clinic. 2 P.M., Operations, Medical, Surgical, Eye, and Genito-urinary Clinics. 4.15 P.M., Mr. Davenport: Ophthalmic Subject (lecture).
FRIDAY.—10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Operations, Medical, Surgical, and Throat Clinics. 4.15 P.M., Lecture. Mr. Green-Armytage: Modern Treatment of Sterility.
SATURDAY.—10 A.M., Medical and Surgical Wards, Surgical and Children's Clinics.
The Lectures at 4.15 P.M. are open to all medical practitioners without fee.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, June 7th.—3 P.M., Dr. J. K. C. Laing: Visit to Darenth Training Colony, Dartford, Kent.

ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C.
WEDNESDAY, June 7th.—3 P.M., Dr. John Roth: Radiological Investigation of Urinary Diseases.

NATIONAL HOSPITAL, Queen-square, W.C.
TUESDAY, June 6th.—6 P.M., Dr. Martin: Familial Diseases.
THURSDAY.—6 P.M., Dr. Walshe: Cerebral Tumours.

ST. MARK'S HOSPITAL, City-road, E.C.
THURSDAY, June 8th.—4.30 P.M., Mr. W. B. Gabriel: Benign Tumours of the Rectum and their Treatment.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, June 7th.—4.30 P.M., Mr. R. J. Swan: Diagnosis and Treatment of New Growths in the Urinary Tract.

Appointments

CALEY, I., B.Chir. Camb., L.R.C.P. Lond., M.R.C.S., D.P.H., has been appointed Asst. Medical Officer of Health, Mansfield.

DEY, M. M., M.B., Ch.B. Leeds, Certifying Surgeon under the Factory and Workshop Acts for Shepley, York.

DUNLOP, J., M.B., B.S. Durh., Asst. Medical Officer of Health and Asst. School Medical Officer, Jarrow-on-Tyne.

GREIG, F. C., F.R.C.S. Edin., Hon. Surgeon, Nottingham General Hospital.

Vacancies

For further information refer to the advertisement columns

Aberdeen City District Asylum.—Sen. Asst. M.O. £450.
Altrincham General Hospital.—Jun. H.S. At rate of £120.
Bethnal Green Hospital, Cambridge-road, E.—Asst. M.O. £350.
Birkenhead Municipal Hospital.—Deputy Med. Supt. £450.
Birmingham and Midland Eye Hospital.—Res. Surg. Officer.
Birmingham City Mental Hospital.—Jun. Asst. M.O. £350.
Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.
Bury County Borough.—Asst. M.O.H., Asst. School M.O., and Asst. Tuber. O. £500.
Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency Officer. At rate of £130.
Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.
Canterbury, Kent and Canterbury Hospital.—H.S. At rate of £125.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Connaught Hospital, Walthamstow, E.—Res. Cas. O., and Res. H.P. Each at rate of £100.
Constance-road Institution, Dulwich, S.E.—Asst. M.O. £250.
Coventry and Warwickshire Hospital.—Res. H.S. and Cas. O. £125.
Derbyshire C.C.—Asst. Maternity and Child Welfare M.O. £600.
Durham C.C.—Asst. Welfare M.O. £500.
Evelina Hospital for Sick Children, Southwark, S.E.—H.P. At rate of £120.
Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.
Fulham Hospital, St. Dunstan's-road, Hammersmith, W.—Clin. Asst. At rate of £100.
Glasgow, Western Infirmary.—Medical Radiologist.
Greenwich Metropolitan Borough.—Jun. Asst. Maternity and Child Welfare M.O. £500.
Guy's Hospital Medical School, S.E.—Lecturer on Physiological Chemistry. £450.
Hampstead General and N.W. London Hospital, N.W.—H.S. At rate of £100.
Hendon, King Edward Memorial Hospital, N.W.—Hon. Radiol.
Hospital for Sick Children, Great Ormond-street, W.C.—In-patient Med. Reg. £300. Two Out-patient Med. Regs. Each £250. Three Out-patient Anæsthetists. Each £50. Also H.P. and H.S. Each at rate of £100
Hospital for Women, Soho-sq., W.—Res. M.O. At rate of £100.
Huddersfield Royal Infirmary.—H.S. At rate of £150.
Hull Royal Infirmary.—Third H.S. At rate of £150.
Infants Hospital, Vincent-sq., Westminster.—H.P. At rate of £75.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £125.
Isleworth, West Middlesex County Hospital.—Res. Asst. M.O. £400.
Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.
Liverpool University.—Lecturer. £600.
London County Council.—Four Temporary District M.O.'s. £150–£300.
London Hospital, E.—First Asst. and Reg. to Children's Dept. £300.
London University.—External Examinerships.
Manchester, Ancoats Hospital.—Hon. Radiologist. Also H.P. At rate of £100. Also Clin. Asst. to Ear, Nose, and Throat Dept. 10s. 6d. per clinic.
National Hospital for Diseases of the Heart, Westmoreland-street, W.—Physician to Out-patients.
Nottingham Children's Hospital.—Res. H.S. At rate of £150.
Nottingham General Dispensary.—Res. Surgeon. £250.
Nottinghamshire C. C. Education Committee.—Asst. School M.O. £500.
Oldham Royal Infirmary.—H.S. At rate of £175.
Paddington Hospital, Harrow-road, W.—Asst. M.O. £350.
Portsmouth, Royal Hospital.—Cas. O. At rate of £130.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Res. Anæsthetist. At rate of £100.
Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100.
Royal Eye Hospital, St. George's-circus, S.E.—Hon. Physician.
St. Helens Hospital, Lancs.—Jun. H.S. £150.
St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Asst. Physician.
Salford Royal Hospital.—Two H.S.'s to Special Depts. Each at rate of £125.
Salvation Army Mothers' Hospital, Lower Clapton-road, E.—Jun. Res. M.O. At rate of £60.
Southampton, Royal South Hants and Southampton Hospital.—Cas. O. At rate of £150.
Southend-on-Sea General Hospital.—Cas. O. At rate of £150.
Warrington Infirmary and Dispensary.—Jun. H.S. £175.
West Bromwich, Hallam Hospital.—Sen. Res. M.O. £350.
West Ham County Borough, Education Committee.—Asst. School M.O. £500.
West London Hospital, Hammersmith-road, W.—H.P. Two H.S.'s., and Res. Anæsthetist. Each at rate of £100.
Willesden General Hospital, N.W.—Cas. O. and H.S. At rate of £100.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. and H.S. Each at rate of £100.
York Dispensary.—Res. M.O. £175.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Farningham, Kent.

The Home Secretary gives notice of a vacancy for a Medical Referee or Referees under the Workmen's Compensation Act for ophthalmic cases arising in the County Court Districts of Alfreton, Buxton, New Mills, Chesterfield, Ashbourne, Bakewell, Burton-on-Trent, Derby and Long Eaton, Ilkeston, Wirksworth, and Matlock; and Ashby-de-la-Zouch, Loughborough, Melton Mowbray, Leicester. Applications should reach the Private Secretary, Home Office, Whitehall, London, not later than June 14th.

Births, Marriages, and Deaths

BIRTHS

ANSON.—On May 23rd, at Thurleigh-road, S.W., the wife of Bernard Anson, M.R.C.S., L.R.C.P., of a daughter.

BROCK.—To Germaine Louise, wife of R. C. Brock, M.S., F.R.C.S., at 27, Welbeck-street, W.1, on April 27th, the gift of a daughter.

JOHNSON.—On May 25th, at Myddleton Cottage, Canonbury Park South, the wife of Dr. W. J. Johnson, of a son.

ORME.—On May 25th, at The Red House, Wendover, the wife of E. Stuart Orme, M.B., B.Ch., of a son.

SHAW.—On May 23rd, at Bentinck-street, W., the wife of Maurice E. Shaw, M.D., M.R.C.P., of Wimpole-street, W., of a son.

DEATHS

DONALD.—On May 27th, at Penzance, Robert Donald, aged 67.

GOUGH.—On May 20th, at Three Beaches, Paignton, John Harley Gough, B.Sc. Vict., F.R.C.S. Edin., M.D. Durh., M.R.C.S. Eng., L.R.C.P. Lond., late of Torquay.

NORMAN.—On May 25th, in a railway accident, Colonel Harold Hugh Norman, C.B.E., late R.A.M.C., only son of the late Thomas and Annie Norman, of Bath, aged 57, and also his wife, Muriel Frances (née Dunderdale).

RODMAN.—On May 25th, at Hazlewell-road, Putney, S.W., George Hook Rodman, M.D., M.R.C.S.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

CAMPAIGNING IN BURMA

EVERY war has its own problems for the medical directing staff. The Army health report from India in 1930 told of the Khajuri Plain operations where bronchitis and pneumonia were the great medical anxieties; that for 1931 talks of malaria and dysentery as probably the chief menaces to the troops in Burma. Account of this latter expedition was given by Major-General J. W. West in February to the United Services Section, and is now available in the *Proceedings of the Royal Society of Medicine* for March (p. 549). It became evident in 1930, he says, that there must be an expedition, and that it would take place during the unhealthiest season, the monsoon (April–October), when the chief needs of the troops, apart from hospitals, would be good water, huts to protect them from the tropical downpours, and malarial prevention. Accordingly, small thatched detention hospitals of 2 to 16 beds were placed at every post, and the fact that there were no deaths from malaria is thought due to the immediate reception of cases at these posts without the delay of long transport during pyrexia. Evacuation was by stretcher, pony, boat, steamer, or train, and when the country dried later, by elephant or by six-wheeled lorries. Wherever there were no good houses to protect troops from the rain, thatched huts were built for them away from the villages, on poles ten feet above the ground, as is the local custom, with ablution, latrine, and kitchen annexes, and drying rooms for clothes to which much of the freedom from sickness is ascribed. Good latrines were provided at all posts; these were flyproof for British troops, but a flyproof latrine for Indians has not yet been evolved. The very muddy water of the river was clarified in one tank, run off, and chlorinated in another by the help of a Horrocks's box. Cholera existed among civilians, none among troops; there were 24 cases of enteric, but no deaths. Malaria is ever present in Burma, and worst in the monsoon; but every soldier had his net; quinine and plasmoquine were used in prophylaxis by troops outside cantonments—also repellents such as bamber oil—and cases increased only from 40 per 1000 in 1930 to 66 in 1931. Simla was generous with extra equipment and rations. Threatened beri-beri was prevented by stopping half the Indian rice ration and issuing *atta* (grain) instead. Illness had to be faced at the end; the final drive through the Pegu highlands caused precisely the number of cases the A.D.M.S. had forecasted, but it ended the rebellion. In the last six months British troops in the most active area averaged 2 per cent. in hospital and 6 per cent. attending. Major-General West recalls that in the Burma war of 1824 nearly half the troops died of disease, and in that of 1852–53, 230 men died in three or four weeks.

MEDICAL FILMS ON HIRE

A GROUP index is a convenient feature of the new catalogue of the medical film library established by Kodak, Ltd. It shows the number of films, some of which are on two or more reels, available for sale or hire under the following among other headings: anatomy (9); dentistry (5); ear, nose, and throat (7); neurology (11); obstetrics and gynæcology (16); ophthalmic (7); orthopædic (19); physiology (16); public health lectures (13); radium and ray therapy (3); surgery (50). Under "miscellaneous" are grouped such useful moving pictures as those demonstrating methods of treating chronic ulcers of the leg, of conducting blood transfusion, and of inducing local anæsthesia. This classification does not always, however, do the collection justice. For example, under the heading anatomy, where it might be overlooked, is included a valuable three reel film on the diagnosis and treatment of infection of the hand photographed under the direction of Dr. Allen B. Kanavel, an authority whose teaching few British medical men would have opportunity to receive directly. The projecting time of each reel is approximately 17 minutes. Films ordered for a particular date are dispatched early enough, allowing for all reasonable delays, to reach the appointed place before noon on the day of hire, and must be posted back before noon on the following day—a rebate being allowed when they are collected by the hirer and returned within 24 hours. The operation of a "kodascope," the apparatus for showing the films, is said to be very simple; instruction in its manipulation will be given gratis to intending hirers.

The existence of this interesting collection should be remembered in connexion with communications to medical societies, and especially on those calamitous occasions when the promised speaker at a medical meeting has to cancel his visit, and the meeting seems doomed to failure. Moving pictures on medical subjects nearly always prove popular and stimulate discussion. Lord Dawson has suggested an early application of cinematography to X ray work. Messrs. Masson et Cie, of Paris, have a library of radiographic films, published under the direction of M. Béclère and P. Porcher, on a wide selection of subjects. Each film is 22·5 × 3·5 cm. and contains ten separate radiograms, and three films make a series (price Fr.25). It would not be a far cry from these to moving pictures.

NEW PREPARATIONS

SPIRONINE (British Drug Houses Ltd., Graham-street, London, N.).—This preparation, described as a stable elixir, contains in each fluid drachm grs. 3 of di-iodo-caffeine hydriodide, together with the soluble constituents of grs. 7½ of coffee. The preparation is for use in asthma, emphysema, and chronic bronchitis, and can be employed as a cardiac stimulant. The dose is 1 fluid drachm, which may be taken in a little water or milk if preferred, and at any time during an attack of asthma spasms, but in chronic conditions is best administered before meals two or three times a day. For general use it is put up in bottles of 2½ or 5 fluid ounces, and in 16 and 80 fluid ounce bottles for dispensing purposes. The manufacturers disclaim providing in any sense "a cure for asthma," but the preparation might be well expected to afford great relief during intermittent paroxysms.

OESTROFORM.—From British Drug Houses Ltd. we have received also this preparation, a crystalline ovarian follicular hormone in sterile solution for intramuscular or subcutaneous injection in ovarian hypofunction. The chemical composition of the preparation is expressed by the formula $C_{18}H_{22}O_2$ (keto-hydroxy-œstrin), and its purpose is to regulate the sex cycle and maintain the female accessory and secondary sexual organs in a developed condition. It may be employed in cases of functional amenorrhœa associated with uterine hypoplasia, in metabolic disturbances of ovarian origin, and also for the treatment of prematurely born infants, in hæmophilia, and in other conditions dependent upon hormonal deficiency. The dosage varies with the patient, and treatment usually is restricted to a selected part of the intermenstrual period commencing about a week after menstruation. The drug should only be used under medical direction. The solution for intramuscular or subcutaneous injection is put up in boxes of 6 × ½ or 6 × 1 c.cm. ampoules, and in tablets for oral administration in bottles of 20 or 40, each tablet containing 1000 units.

Dr. C. B. Hogg (Kettering) writes: As a sequel to faulty reporting of the proceedings of a local education committee meeting, certain investigations concerning left-handed children have, in the lay press, been incorrectly attributed to me. My letter to the education committee regarding left-handed children, which was read at the meeting, gave the names of the investigators in conjunction with the research work to which reference was made.